

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—24TH YEAR.

SYDNEY, SATURDAY, JANUARY 30, 1937.

No. 5.

Table of Contents

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES—	Page.	BRITISH MEDICAL ASSOCIATION NEWS—	Page.
The Jackson Lecture—Midwifery Since the Time of Ambroise Paré, by ALEX. H. MARKS, C.B.E., D.S.O., M.D., F.R.A.C.S.	157	Scientific	184
George Bass, the Surgeon and Explorer, by ERNEST SCOTT	165	Nominations and Elections	190
The Influence of External Temperature on the Blood Sedimentation Rate, by DAVID B. ROSENTHAL, M.D., M.R.C.P.	172	MEDICAL SOCIETIES—	
REVIEWS—		The Melbourne Pædiatric Society	190
Practical Surgery	178	CONGRESS NOTES—	
The Menopause	178	Australasian Medical Congress (British Medical Association): Fifth Session	191
Ionization	178	CORRESPONDENCE—	
Historical Essays	178	Treatment of Early Carcinoma of the Lip	191
LEADING ARTICLES—		OBITUARY—	
The Council for Scientific and Industrial Research	179	William Ian Mackintosh	192
CURRENT COMMENT—		DIARY FOR THE MONTH	192
A Further Cause of Optic Atrophy	180	MEDICAL APPOINTMENTS	192
The Diagnosis of Amœbic Dysentery	181	MEDICAL APPOINTMENTS VACANT, ETC.	192
ABSTRACTS FROM CURRENT MEDICAL LITERATURE—		MEDICAL APPOINTMENTS: IMPORTANT NOTICE	192
Dermatology	182	EDITORIAL NOTICES	192
Urology	182		

The Jackson Lecture.¹

MIDWIFERY SINCE THE TIME OF AMBROISE PARÉ.

By ALEX. H. MARKS, C.B.E., D.S.O., M.D. (Dublin),
F.R.A.C.S.,
Brisbane.

WHEN delivering a memorial lecture such as this, it is usual to make an eulogium of the man in whose honour the lecture has been instituted. In this case, as Ernest Sandford Jackson is still with us and is known to most of us, there is little I can say to add to his prestige in the medical profession. There is, however, one activity of his, when he was

Superintendent of the Brisbane Hospital, for which the profession owes him its deepest gratitude. It was he who instituted the Nurses' Training School at the hospital on lines that produced not only an efficient nursing profession, but some outstanding matrons and nurses, both in peace and in war time.

The choice of a subject is limited, as it has been laid down that these lectures shall be of an historical nature. Dr. Felix Meyer, when he delivered the Jackson Lecture in 1932, dealt with midwifery to the days of Ambroise Paré, and it seemed to me that a continuation of this subject would be appropriate and of interest.

The advance of midwifery since that time may be divided under three headings: (i) the invention of instruments to assist the delivery of an infant; (ii) the discovery of bacteria, which opened up anti-septic and aseptic surgery and treatment; and (iii)

¹ Read at a meeting of the Queensland Branch of the British Medical Association on September 4, 1936.

the study of endocrinology, which is now making itself felt in midwifery.

I propose tonight to deal with the first of these. Being particularly interested in midwifery, I have kept my eyes open for old books on the subject and have collected a series that gives a fair record of the art:

Ambroise Paré's twelfth edition, published in 1664.

Heister's "Surgery", an English translation of the Latin edition, published in 1739.

Smellie's "Midwifery", as edited by McClintock. His text was an edition of Smellie's work, published in 1788, but he states that all editions published since Smellie's death in 1763 have been transcripts.

Heath's translations of Baudelocque, published in 1790.

Denman's "Aphorisms", fifth edition, published in 1807; the original edition was published in 1792.

Blundell's "Midwifery", 1834.

Ramsbotham's "Midwifery", 1841.

Rigby's "Midwifery", 1844.

These were all standard works in their day, but a few words about the authors will not be out of place.

It is unnecessary to say anything about Ambroise Paré as a surgeon, but as a midwife he made the first great advance in teaching version.

Lawrence Heister, a German, after studying surgery in German universities, went to Holland in 1707, and joined the Dutch armies during Marlborough's wars in order to improve his surgery. He studied in Leyden and other Dutch towns, and was eventually Professor of Physic and Surgery at the University of Helmstadt in Hanover.

Smellie was born in or near Lanark in 1697. He appears to have started as an apothecary about 1720, moving to London in 1739.

McClintock commences his memoir thus:

As a teacher, author and practitioner, there is no British obstetrician—certainly none of the eighteenth century—who deserves so high a place in our estimation as William Smellie. Nay, more, under whichever of these several aspects we may regard him, he scarce has an equal. Whilst of all the men, British and foreign, who have most largely contributed to the advance of sound obstetric knowledge, Smellie may justly stand in the foremost rank. No accoucheur, ancient or modern, unfolded so many of the principles of true obstetric science, and in his practice so consistently acted upon them.

John Fairbairn, in his "Gynæcology with Obstetrics", says:

As far as British obstetrics is concerned, modern midwifery may be said to begin with Smellie, and it is interesting to note that the date of his birth, 1697, is but twenty-one years, and the publication of his epoch-making treatise on midwifery but sixty years, after the appearance of the last edition of the "Birth of Man-kinde" (1676), which was merely a rehash of the teaching of the great Alexandrian school, thus showing the long reign of the ancient and the almost sudden appearance of modern obstetrics.

Baudelocque, a French obstetrician, practised in Paris.

Thomas Denman practised in London at the end of the eighteenth century. The book I have, published originally in 1792, is "Aphorisms on the Application and Use of the Forceps and Vectis, on Preternatural

Labours, on Labours Attended with Hæmorrhage and with Convulsions". It is a sort of golden rule series published for students. In the later books there are many references to his midwifery.

James Blundell was Professor of "Obstetricry" at Guy's Hospital, 1834. Francis Ramsbotham practised in London, and was Lecturer in Obstetrics at the London Hospital. Edward Rigby was Lecturer in Midwifery at Saint Bartholomew's Hospital.

The later books referred to are the American edition of "Cazeau and Tarnier", 1884; Barnes's "Midwifery", 1885; and the "American Textbook of Obstetrics", 1903.

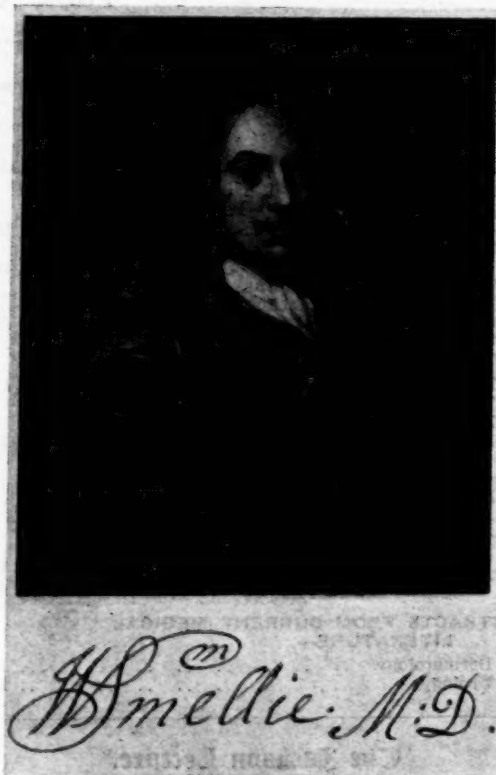
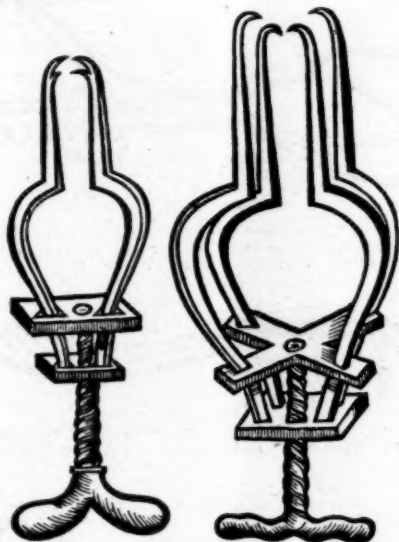


FIGURE I.

Up to the time of Paré, midwifery had fallen into the hands of the midwife, the *sage femme*. The physician or surgeon was called in only when the patient was in *extremis*. The only hope they had of saving the mother was to perforate the infant, and professional credit was naturally at a low ebb. Again, the modesty or rather false modesty of the period rather precluded the employment of a male. It is interesting how the idea of modesty survived, for McCann, of Dublin, in his lectures on midwifery, 1900, taught us that we should be able to deliver a woman under a sheet, and also to pass a catheter without exposing the parts. Paré, with his influence at court, seems to have overcome the difficulty somewhat. His great advance was to describe version,

and he uses a fillet to the child's leg, but he uses no instruments to assist the delivery of a live child.

During the century following Paré three instruments came into use. A fourth, the blunt hook, used in a breech birth to put traction in the groin, is not included. The three instruments are (i) the fillet or lack, (ii) the vectis, lever or tractor, and (iii) the forceps.



Le vingt-quatrième Livre, instruments dits Pieds de griffons, propres pour extraire la teste d'un enfant demeurée dans le ventre de la mere.

FIGURE II.

Avicenna (980 to 1030) and other Arabian physicians mention a forceps which was evidently meant to assist a live birth, for Avicenna writes that, if it fails, it will be necessary to perforate the child and remove it with hooks.

The pictures given of these instruments show a fixed joint, which would make application difficult, and serrated edges which must have damaged the infant. The Arabians also recommend the use of a fillet.

I shall deal with each instrument separately, and though there may be some overlapping, it will be easier to follow.

The Fillet or Lack.

Smellie (1697 to 1763), in his "Practice of Midwifery", published in 1752, writes:

The lacks or fillets are of different kinds, of which the most simple is a noose on the end of a fillet or limber garter; but this can only be applied before the head is fixed in the pelvis, or when it can be pushed up and raised above the brim. The *os externum* and *internum* having been gradually dilated, the noose must be conveyed on the end of the fingers and slipped over the fore and hind head. There are also other kinds differently introduced upon various blunt instruments, too tedious to describe or use; but the most useful of all these contrivances is a fillet made in the form of a slender sheath mounted upon a slender whale bone about two feet in length, which is easier applied than any other expedient of the same kind.

He then goes on to describe the application over the face and chin. The whale bone was then withdrawn, the ends of the fillet were tied together and traction was made with the pains. He points out the risk of damage to the soft parts and the difficulty in applying it when the chin is flexed on the body, and the poor hold that is gained over the face or occiput. He further states:

I have tried several kinds of lacks, and in particular the last-mentioned fillet, which was communicated to me by the learned Dr. Mead in 1743. As this fillet could, in all appearance, be more easily introduced than any other, I for several years carried it with me when I was called to difficult cases and sometimes used it accordingly; but I generally found the fixing of this, as well as other lacks, so uncertain that I was obliged to have recourse to the forceps which, being introduced with greater ease, and fixed with more certainty, seldom failed to answer the purpose better than any other method hitherto found out.

The use of the fillet seems to have gradually dropped, for Heath in his translation of Baudelocque in 1790, uses it only when applied to a foot in a breech or over a knee in a knee presentation or in the groin in place of one's fingers or blunt hook.

In Denman's "Aphorisms", published in 1792, he mentions the three instruments contrived to preserve the life of both mother and child—the fillet, the vectis and the forceps. He describes the use of both forceps and vectis, but does not mention the fillet.

Blundell, in 1834, in a paragraph headed "Instruments in Common Use", does not mention the fillet, but in a footnote gives an extract from Denman's "Midwifery", which states: "Formerly the fillet was used as an obstetric instrument."

Ramsbotham, in his "Midwifery", 1851, says of the fillet:

The latter means is now most properly discarded from British practice in cases of head presentation.

McClintock, an ex-Master of the Rotunda, in his edition of Smellie's works, records:

There seems, however, to be a revival of the use of the instrument, as Dr. Barnes tells us he believes the fillet is largely used by some practitioners, and with great success. Dr. Westmacott brought a whale bone lack or fillet under the notice of the London Obstetrical Society in 1869, published in the eleventh volume of the transactions, and in the eighth volume is a description of a steel fillet by Dr. Sheraton.

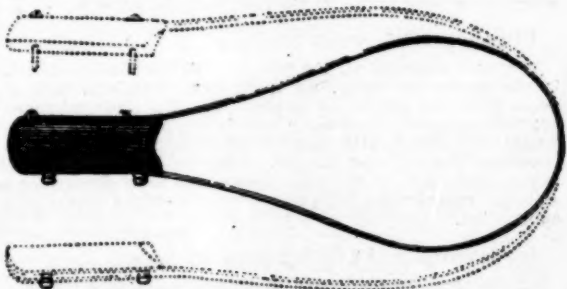


FIGURE III.

Wilmott's fillet. (From Arnold's catalogue.)

The instrument has at last, I believe, passed out of use, though I shall show you a picture from Arnold's catalogue of 1904 depicting one.

The Lever, Vectis or Tractor.

The history of the lever, vectis or tractor is very like that of the forceps. It was first made public in Holland, and its invention is generally ascribed to Roonhuysen. Hugh Chamberlen went to Holland about 1695, and practised there for some years. He apparently sold to Roonhuysen his secret. Other surgeons gradually acquired the secret, until in the year 1753 Vesscher and Van de Poll, physicians practising in Amsterdam, bought the secret for five thousand louis from Gertrude, the daughter of John de Bruin and wife of Herman Van de Hyde, to whom it had been bequeathed by her father as a legacy, and made it public.

This instrument, which had caused great interest in Holland and on the Continent, and of which great things were expected, was found to be a flat, plain, unfenestrated piece of iron, slightly bent at the ends into the segment of a large circle. As some years later, when a discovery was made of instruments belonging to the Chamberlen family, a similar instrument was found, it is probable that Hugh Chamberlen sold the secret to the Dutch. It is generally accepted that Roonhuysen used a forceps, and it is probable that the Dutch physicians found the lever easier of application and easier to keep secret, so became adepts in its use, and the forceps took a second place. The use of the lever became very general, and controversies arose regarding its advantage or disadvantage as compared with the forceps.

Baudelocque (Heath's translation, 1790) says:

The lever which is still sometimes used in the practice of midwifery, has scarcely retained anything of the form which it received from Roonhuysen, its original author, and has, as I may say, borrowed a new one from every hand which has employed it.

Denman, 1792, writes:

Before and immediately after the publication of my second essay on "Difficult Labours", several gentlemen with whom I converse and to whom I ought to pay great respect, reprehended in very decided terms what I have advanced with regard to the forceps and vectis. Some maintained that the forceps is an instrument far superior to the vectis, of which I was accused of speaking too favourably. Others of equal respectability accused me of speaking with timidity or restraint of those advantages which, they assert, the vectis has over the forceps.

Blundell, 1834, wrote:

The next instrument, the use of which I shall mention, is the tractor or lever, an instrument excellent, and of great effect in dexterous hands. If skill and judgment are wanting, even the tractor may inflict dreadful injuries; but in such hands still greater mischief may be expected from the long forceps; to you, therefore, I recommend its use as the safer of the two, possessing, as it does, in an eminent manner the advantages of portability and ready application.

In describing the instrument he says:

By different practitioners in different times, a variety of levers have been contrived; but one of the best that I know of, and that which I believe is generally allowed to have its excellencies, is the lever which was used by the late Dr. Lowder, resembling somewhat a single blade of a pair of forceps, whence it is often called the "single blade". Its length should be about fourteen inches. For the convenience of the pocket, it may be composed of two

parts, separating in the middle, and uniting by a screw joint, which is secured by a small catch or spring; the handle of the instrument should be large and roughened and larger at the end, to yield a more effective grasp. The shank should be strong, for I have heard of it breaking short during an operation.

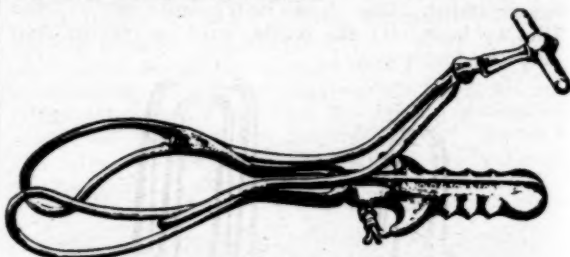


Fig. 2697.

Axis Traction Midwifery Forceps (Simpson's), with detachable tractors and aseptic metal handles, nickel-plated, Fig. 2697 2 5 6



Fig. 2698.

Tractor (Le Page's), for use with midwifery forceps, forged entirely of solid steel, nickel-plated, Fig. 2698 0 7 6

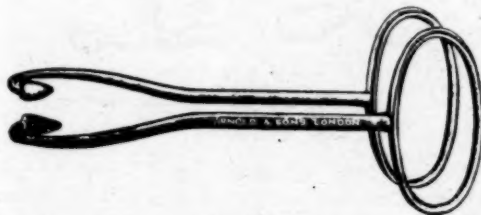


Fig. 2699.

Tractors (Morgan's), for use with midwifery forceps, nickel-plated, Fig. 2699 0 12 6



Fig. 2700.

Vectis (Lever's), with metal handle, nickel-plated, Fig. 2700 0 10 0

FIGURE IV. (From Arnold's catalogue.)

Ramsbotham, 1841, says:

The relative value of the vectis and forceps as obstetrical assistants has been subject of much controversy. Some practitioners invariably have used the vectis as Bland, Lowder, Davieson and Sims; others gave the preference to the forceps, among which number were Smellie, Denman, Osborn, Hamilton. Of the present teachers, I believe most are in the habit of employing the latter.

After dealing with the advantages claimed for either instrument, he concludes:

There are only three cases in which I think the latter instrument [the vectis] preferable. Under presentations of the brow, face or sides of the head, the ear, for example. In brow presentation, the instrument may sometimes be

advantageously used, being passed over the occiput, to bring down the vertex and prevent the case being turned into a face presentation; but this is seldom requisite, and can only be effected before impaction has occurred; and where the face presents and the head has become impacted in the pelvis, the case is more likely to be easily terminated by the adaption of the vectis as shown in Plate 55 than by the forceps; and the same remark holds good in regard to presentation of the side of the head.



FIGURE V.

Rigby (1844) does not mention the vectis. Before describing the various species of dystocia or faulty labour, it will be necessary to consider the different means, with which the increasing experience of years has furnished us, of giving artificial assistance in such cases. These may be brought under two heads, first those used when delivery can be effected with safety to the mother and her child; secondly, those used when delivery can be effected only at the expense of the infant's life. Under the first head come the forceps, turning, the Cæsarean operation and artificial premature labour; under the second are craniotomy or perforation and embryotomy.

In the American edition of "Cazeau and Tarnier", published in 1884, it is stated that the vectis or lever which Burns proposed calling the tractor, was formerly much used "though at the present day it is scarcely ever resorted to, since in nearly every case in which it has been recommended, the forceps may be advantageously substituted".

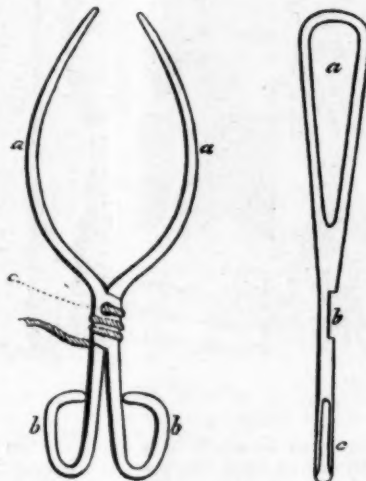
The Forceps.

The forceps as used at present had its birth towards the end of the seventeenth century. Forceps were, as far as can be ascertained, invented by Dr. Peter Chamberlen, who died in 1683. The invention was kept a secret in the family till Hugh, Peter's eldest son, sold the secret to Van Roonhuysen in Holland. Dr. Hugh visited Paris in 1673, where he tried to sell his secret to the French

Government for a large sum—10,000 thalers. Moreceau was appointed adjudicator by the Government, and chose a case of contracted pelvis in which Chamberlen said he could effect delivery and failed. He then returned to London. Later, in 1698, he visited Holland and sold his secret to Roonhuysen.

It is generally accepted that Roonhuysen used forceps, though, as we have seen, when the secret held by several Dutch practitioners was made public, a vectis, not a forceps, was disclosed.

In 1815, in a house in Essex which had belonged to the Chamberlens, a series of obstetric instruments was found which showed a general improvement in design, from first a fixed joint to a joint with a peg, and thirdly one in which each blade had a hole through which a tape could be passed to fix the blades.



The accompanying cut is taken from a drawing of the most perfect of Chamberlen's instruments. No. 1 is the forceps locked: a, the blades; b, the handles; c, the hole in the joint, through which is passed the string to connect the blades. No. 2, the front view of a single blade: a, the fenestra; b, the groove in the shaft forming the lock, by which the two blades, perfectly similar in form, are adapted to each other; c, the handle.

FIGURE VI.

Chapman, in 1735, published a "Midwifery", and described the forceps. He stated that they had been in use for some time; and there were various patterns. Drinkwater, of Brentford, who died in 1728, used forceps.

Giffard employed forceps in 1726; so we may say that forceps came into use about 1720, though they did not become widely known till 1733 and 1734, when Chapman and Giffard both published descriptions.

Smellie's chief contribution to the use of the forceps was: first, an improvement of the lock (the

present or English lock is Smellie's); second, the addition of a pelvic curve; third, a very careful description of their application, based on the mechanics of labour.

The first mention of forceps in the authors quoted is by Heister.

In this difficulty [the head being fixed and it being impossible to turn], Palfinus, to avoid injuring the head with hooks, or other rough instruments, has contrived a kind of broad and double scoop without any edge, being flat, which being applied to each side of the head, he thereby endeavours to extract the fœtus, without lacerating or wounding any part of it; see the figure of the instrument (Fig. 16), but the size of the instrument which was sent me by the author is as large again as the figure [the figure is nearly seven inches long].



FIGURE VII.

This instrument he would have applied when the fœtus is still alive, or at least when we are not certain of its death. But the generality of infants who have had their heads compressed in this manner, are thereby so much weakened, and their vital functions so much destroyed, that they may be looked upon as dead, and may therefore be extracted with hooks by the common method. I have indeed used this instrument of my friend Palfinus, but without success, for if you compress the head with it but gently the fœtus is held too firmly to give way to it, and if you press it too strongly there is a danger of wounding its tender head. I therefore endeavoured amending the instrument to joining its two parts together with a hinge, but even then it did not answer expectations, so that in the deplorable situation of the fœtus we have no remedy left but the Cæsarean section or to extract the fœtus, dead or alive, with hooks.

Smellie tells us:

We have already observed that the greatest number of difficult and lingering labours proceed from the head's sticking fast in the pelvis, which situation is occasioned by one of the seven causes recited above. When formerly this was the case the child was generally lost, unless it could be turned and delivered by the feet; or if it could be extracted alive, either died soon after delivery, or recovered with great difficulty from the long and severe compression of the head, while the life of the mother was endangered from the same cause as above described; for the pressure being reciprocal, the fibres and vessels of the soft parts contained in the pelvis are bruised by the child's

head, and the circulation of the fluids obstructed, so that a violent inflammation and sometimes a sudden mortification ensues. If the child could not be turned, the method practised in these cases was to open the head and extract with the crotchet; and this expedient produced a general clamour among the women, who observed that when recourse was had to the assistance of a man-midwife, either the mother or child, or both, were lost. This censure, which could not fail of being a great discouragement to male practitioners, stimulated the ingenuity of several gentlemen of the profession, in order to contrive some gentler method of bringing along the head so as to save the child without any prejudice to the mother.¹

Their endeavours have not been without success; a more safe and certain expedient for this purpose hath been invented, and of late brought to greater perfection in this than in any other kingdom, so that if we are called in before the child is dead, or the parts of the woman in danger of a mortification, both the fœtus and mother may frequently be happily saved.

This fortunate contrivance is no other than the forceps, which was, as is alleged, first used by the Chamberlens, by whom it was kept as a nostrum, and after their decease so imperfectly known as to be seldom applied with success; so that different practitioners had recourse to different kinds of fillets or lacks. Blunt hooks also of various make were invented in England, France and other parts. The forceps, since the time of Dr. Chamberlen, have undergone several alterations, particularly in the joining, handles, form and composition.

The common way of using them formerly was by introducing each blade at random, taking hold of the head anyhow, pulling it straight along, and delivering with downright force and violence; by this means both *os internum* and *externum* were often torn, and the child's head was much bruised. On account of these bad consequences they had been altogether disused by many practitioners, some of whom endeavoured in lieu of them to introduce divers kinds of fillets over the child's head; but none of them can be so easily used or have near so many advantages as the forceps, when rightly applied and conducted according to the directions that will be laid down in the next section.

Mr. Chapman, as mentioned in the introduction, was the first author who described the forceps with the method of using them; and we find in the observations of Giffard several cases in which he delivered and saved the child by the assistance of this instrument. A forceps was also contrived at Paris, a drawing of which may be seen in the "Medical Essays of Edinburgh", in a paper communicated by Mr. Butter, surgeon; but after Mr. Chapman had published a delineation of his instrument, which was that originally used by the Chamberlens, the French adopted the same species, which among them went under the denomination of Chapman's forceps.

For my own part, finding in practice that by the directions of Chapman, Giffard, and Gregoire at Paris, I frequently could not move the head along without confusing it and tearing the parts of the woman; for they direct us to introduce the blades of the forceps where they will easiest pass, and, taking hold of the head in any part of it, to extract with more or less force according to the resistance; I began to consider the whole in a mechanical view, and reduce the extraction of the child to the rules of moving bodies in different directions. In consequence of this plan, I more accurately surveyed the dimensions and form of the pelvis, together with the figure of the child's head and the manner in which it passed along in natural labours; and from the knowledge of these things I not only delivered with greater ease and safety

¹ The "censure" here alluded to was prevalent also in Hugh Chamberlen's time, for he tells us in the preface to his translation of Mauriceau (the date of which preface was 1672) that the practice of "fastening hooks in the head of a child in difficult labour, where it came right, has very much caused the report that when a man comes, one or both must necessarily die, and makes many for that reason forbear sending until either be dead or dying".

than before, but also had the satisfaction to find, in teaching, that I could convey a more distinct idea of the art in this mechanical light than in any other, and particularly give more sure and solid directions for applying the forceps, even to the conviction of many old practitioners, when they reflected on the uncertainty attending the old method of application. From this knowledge, too, joined with experience and hints which have occurred and been communicated to me in the course of teaching and practice, I have been led to alter the form and dimensions of the forceps, so as to avoid the inconveniences that attend the use of the former kinds.

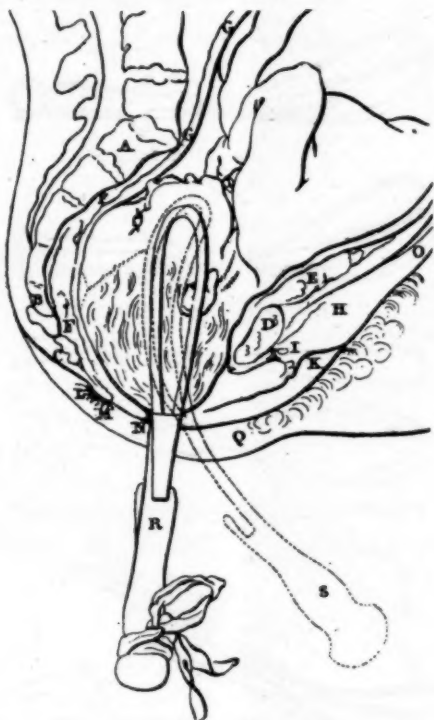


FIGURE VIII.

As we have seen, Smellie improved on the Chamberlen's forceps by adding the pelvic curve and improving the lock. He tells us in one place of how he tried to make forceps of wood so that there would be less noise and the patient would not be frightened by knowing instruments were being used.

Baudelocque gives very careful descriptions of the method of use of the forceps under every position of the head. He prefers them to the lever. In his introduction he writes, when mentioning the outstanding teachers of the art:

Lastly came Smellie and Levret; with them began the most brilliant epoch of the art of midwifery. The forceps recently invented, but scarcely yet perfectly sketched, having received a new form from the hands of those two celebrated men, but especially from those of Levret, entirely changed as I may say the face of the art, by causing crotchets and other instruments of that kind to be laid aside, which we were often under the melancholy necessity of employing to extract from the womb of the mother the unfortunate child who could not be spared but by sacrificing her.

Denman, as we have seen, used and recommended both the forceps and vectis. He lays down very definite teaching regarding the forceps:

The general arguments against the use of instruments have been drawn from their abuse; with it appears, however, that necessity will, in some instances, justify the use of the forceps; that when such necessity exists their use is not only justifiable, but often highly advantageous, that delay to apply them, slowness in their application and use will secure as far as possible both the mother and child from untoward accidents; but that mischief cannot be prevented if they are applied too soon, or the operation with them be performed in a hurry.

Blundell describes the long forceps thus:

The long forceps, from end to end, measures about fourteen inches; and, when properly applied at the brim of the pelvis, it lies obliquely with its point directed towards the navel, and its shank upon the perineum. By a distinguished surgeon of the last century, Leveret I mean, the long forceps were laterally incurvated; so that by this curvature, on placing the forceps in the pelvis, the handles are thrown forward from the sacrum, and the perineum is more secure. Forceps, both straight and incurvated, I have repeatedly used: and after some experience of both, I decidedly prefer the straight. The lateral curvature may protect the perineum somewhat, but its most certain security is derived from the prudence and gentleness of the accoucheur. The blades of the long forceps, in the method of using them hereafter to be recommended, may be applied to different parts of the head; as, however, they are more generally laid over the forehead and occiput, it is to these regions of the cranium that they are, with the greatest nicety, adapted. Unless the blades be elastic, absolute adaptation can, I conceive, never be obtained; for while the form of the instrument remains unchanged, that of the head itself varies. Smellie's lock is decidedly the best; the lock should be loose, so as to admit a conjunction of the blades, although they are not brought into exact apposition with each other; for, in applying them to the head, this apposition cannot always be obtained. The instrument should be strong, and free from points or edges. Cleanliness renders it desirable that the forceps should not be coated with leather. I do not like to see an elegant pair of forceps. Let the instrument look like what it is—a formidable weapon. *Arte non vi* may be usefully engraved upon one blade, *Cave perineo* upon the other.

Of the short forceps he writes:

Provided you have dexterity enough to make use of the long forceps, it will rarely happen that you will find it requisite to have recourse to those that are short. When the head of the child is so low down in the pelvis that it lies within the reach of this instrument, in general it will be found that no assistance of the instrumental kind is required; and I have observed already that without a peremptory necessity instruments are not to be used at all; and even in those few cases where there is, at the outlet, such deficiency of room, or other obstruction, as to impede the passage of the child, and to render it necessary to have recourse to instrumental assistance, should the long forceps be rejected, you will find that the instrument already commended, the vectis, or tractor, is sufficient to abstract the fetus, so that in this case also the short forceps is not required. On this account it is that it has rarely happened that I have had recourse to the short forceps. In some cases, and especially to those who are unskilled in the use of the tractor or long forceps, they are however not without recommendation. This instrument is distinguished from the longer forceps by its brevity, whence it is denominated the short.

In some cases the blades of this instrument may be applied, and with advantage, too, over the face and occiput, in the way I shall hereafter demonstrate; the instrument, however, has been formed to lie upon the sides of the head, the lock being in apposition with the vertex, and the point with the chin, while the ears lie in the fenestra

—the head, in short, being enclosed by the forceps. Accordingly, if the head be of the standard and ordinary make, the short forceps, when so applied to the cranium, fit exceedingly well.

Ramsbotham gives a description of both the short and long forceps. He prefers the short forceps without a pelvic curve, but considers that the long forceps should have one. He draws attention to the rules laid down by Hunter, Osborn and Denman for the use of the forceps, and adds:



No. 6071. f s. d.
6071—Midwifery Forceps, Asallini's, nickel-plated, each 0 16 0



6072.
6072—Midwifery Forceps, Aveling's, axis traction, with aseptic metal handles, nickel-plated ... each 1 6 0



6073.
6073—Midwifery Forceps, Barclay's, with aseptic metal handles, nickel-plated ... each 1 7 0



6074.
6074—Midwifery Forceps, Barnes-Neville's, axis traction, with metal handles, nickel-plated, each 2 0 0

FIGURE IX. (From Down's catalogue.)

Another point to be attended to is whether the instrument should be coated. It was the old fashion to cover each blade entirely with leather, that it might be less formidable to the sight; that, in locking it, little noise might be made; and that it might be softer to the woman's person, and therefore not so likely to do injury. Many of the instruments depicted in Smellie's and other plates are finished in this way. This practice was in my opinion objectionable on many grounds. In the first place, the leather takes up room, and does not afford strength equivalent to the space it occupies; and we shall find in difficult labour, when disproportion from any cause produces the delay, that it is of consequence to gain even the minutest portion of an inch in space. Again, the instrument does not pass up so easily when covered with

leather as when it is plain and polished. A still greater objection, however, has been urged against this practice, and one that has caused it to be generally abandoned. It has been supposed that infection—the virus of syphilis



Fig. 192—Forceps of Pajot.

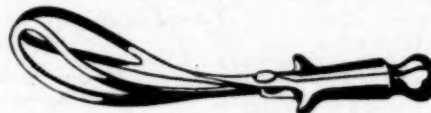


Fig. 193—Forceps of Naegele.



Fig. 194—Forceps of Elliott.



Fig. 195—Forceps of Lazariewich (straight).

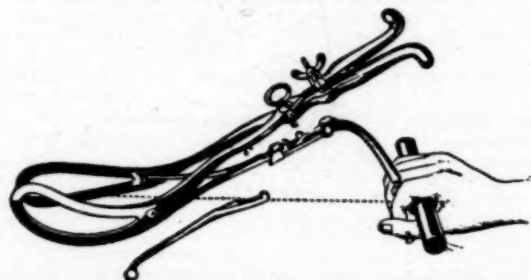


Fig. 196—Axis-traction forceps of Tarnier (to show the details the hand is represented in an improper position for traction; below is one of the traction-rods).



Fig. 197—Lusk's modification of the Tarnier forceps (the traction-rods are shown free from the catches that hold them during application of the blades and ready for attachment of the tractor).

FIGURE X. (From Arnold's catalogue.)

or gonorrhoea, for example—has been carried from a diseased to a healthy person. If there be the slightest probability of such a sad accident, it would be our bounden

duty either to discard the leather entirely or to change the covering after each time the instruments are used.

The only coating I would admit of is a silver wash: to this there can exist not the slightest objection; and those who are critically particular in regard to the neatness of their instruments may, without any detriment to

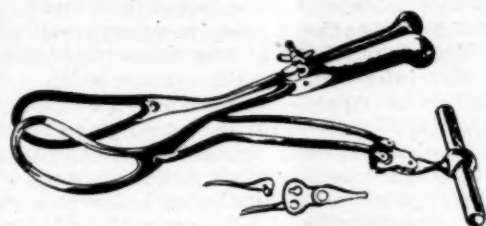


Fig. 198—Axis-traction forceps of Simpson.

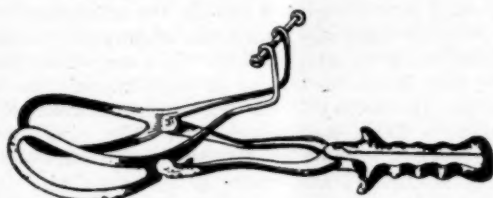


Fig. 199—Axis-traction forceps of Breus (the rods having the right-angled bend are against the shank when application is made).



Fig. 200—Axis-traction forceps of Poulet (tapes run through eyes in blades and through ring on traction shank, and fastened to a cross-bar).

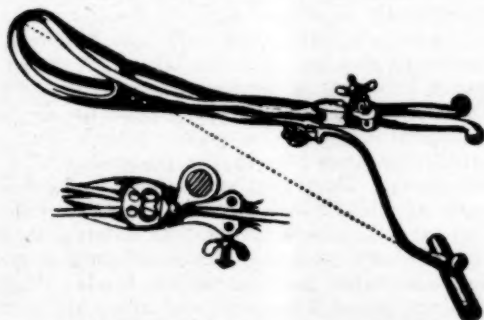


Fig. 201—Axis-traction forceps modified by Jewett (after Milne-Murray's specifications, with details of lock).

FIGURE XI. (From Arnold's catalogue.)

their efficacy or value, require them to be disguised under the specious semblance of the precious metals. Practitioners in the East or West Indies, and other warm climates, would do well to incur this additional expense in their obstetric forceps, as well as other surgical instruments, not for the sake of appearance, but to prevent rust.

Rigby gives very careful directions for the use of the instruments, but there is nothing outstanding to note.

The next marked change came with Aveling's sigmoid axis-traction forceps, described in 1868, giving a better hold and somewhat of an axis-traction effect.

Tarnier about 1880 produced an axis-traction forceps on which many are still modelled, extra bars being attached close to the fenestra of the blades, such as we see in Milne Murray's forceps.

Some time in the nineties Neville designed the axis-traction forceps known by his name. There has been considerable discussion whether in this a true axis-traction is procured, but it is now generally accepted that it is. An interesting and simple introduction was Morgan's hooks; and in Cazeau and Tarnier's "Midwifery" there is a description of two appliances which can be attached to the forceps, and by the use of a screw, the woman's thighs or knees being used as a fixed point, the foetus was forcibly extracted. One is not surprised that these did not come into general use.

The only recent change is the introduction of Keilen's instrument. In this there is a tendency to revert to the long straight forceps, and its chief use is in rotating a persistent occipito-posterior presentation.

There are many other designs differing in details, such as the breadth of the blade, the amount of curvature, the lock, the shape of the handles, some of which will be seen in the pictures, but no advantage can be gained in detailing them. They leave us in agreement with Pajot, who said that he did not reproach a man for inventing a forceps, since that might happen to anyone.

That, gentlemen, brings me to the present day, with the use of what Blundell called embryospastic instruments.

As I have said, I have made an attempt to give a word picture of progress by using the words of those who were leaders of the art in their own times, and one or two of whom have become almost tutelary deities. It only remains to thank you again for the honour you have done me, and trust that the picture I have drawn is worthy of the occasion.

GEORGE BASS, THE SURGEON AND EXPLORER.¹

By ERNEST SCOTT,

Professor of History, University of Melbourne.

WHEN invited to deliver an address on George Bass on the occasion of the unveiling of a memorial to him in this hall of the British Medical Association in Melbourne, I accepted readily, and indeed gratefully, for several reasons. First, this opportunity enables me to give an appreciation of the man who, by a feat of navigation that commands our admiration, first explored part of the coast of Victoria, and discovered one of its distinguishing

¹ Read at a meeting of the Historical Section of the Victorian Branch of the British Medical Association on October 14, 1936.

geographical features, Westernport. Secondly, it furnishes a suitable occasion for insisting that Bass was the first man in the history of Australia who applied a trained scientific mind and temper to the study of the flora and fauna of this country. Thirdly, Bass was the first medical man to be associated in any way with Victoria. I do not mean, of course, that he practised medicine or performed surgical operations in this country, because there was no settlement in Victoria when he landed on our shores. He came here not in his capacity as surgeon of one of the King's ships, but as an explorer of coasts then unknown. But the fact that he was a member of the medical profession with a passion for investigation, and that he was the leader of the little expedition which first put part of Victoria on the map, gives to his exploit a particular interest for the members of your profession in this country. Victorian history, as apart from the remainder of the history of Australia, starts with Bass; and it is that fact which makes it particularly appropriate that there should be a memorial to him in this official home of the medical profession in this State.

Bass, like his friend, Matthew Flinders, was a Lincolnshire man. His father was a farmer in that county, who died while George Bass was still a boy. The family then moved from Aswarby, near Sleaford, where the farm was, to Boston, where young Bass was apprenticed to a local surgeon. Apprenticeship to a surgeon was then a regular method of securing enough medical education to enable a young man to obtain a diploma certifying his qualification to practise his profession. As is well known, at that period not all those who set up as medical men had even that amount of training. Sir Walter Scott, contemporary with Bass, mentions in a letter that while working at one of his books he found it necessary to visit Northumberland to examine the scene of the battle of Flodden, fought in the reign of Henry VIII. Needing medical advice for his servant, he sought the local doctor. At the surgery he met a grave, sagacious-looking person in a black suit and a shovel hat, whom he recognized as having been a blacksmith a few years before in Scotland, where he combined with his work at the forge medical and dental attention to the horses of the district. "Can it be possible", he exclaimed, "that this is John Lundie?" "Truth it is, your honour." "Well, you were occasionally a horse doctor before; how do you get on now?" "Extraordinary weel", he was assured. "Your honour kens that my practice is verra sure and verra orthodox, for I depend entirely on twa simples." "And what may their names be?" "My twa simples are just laudamy and calamy." "Simples indeed", exclaimed Sir Walter; "but, John, do you never happen to kill any of your patients?" "Whiles they die and whiles no, it's a' the will o' Providence. Onyway, your honour, it would be lang before it makes up for Flodden!"

Bass having obtained his diploma, his mother established him as an apothecary in Lincolnshire.

In those days in English small towns the apothecary was the only available person practising medicine. Even in many towns of some size, large enough at all events to return members to Parliament, there were no hospitals; and it was not, I think, till about the middle of the nineteenth century that "infirmaries", as they were termed, were founded in the English provinces to any considerable extent. We may infer from certain phrases which I find recorded in Apperson's "English Proverbs and Proverbial Phrases", that the local apothecary was often both a very talkative individual and one who had a well defined idea of his own importance. The phrase, "proud as an apothecary", figures in that work alongside "proud as a peacock" and "proud as Lucifer". As substitutes for "he can talk a dog's leg off" I find the phrase "talks like an apothecary" in several instances; and an eighteenth century author, cited by Apperson, puts the question: "Why is a man when he speaks at random said to talk like an apothecary?" We may presume from these instances that apothecaries, at the time when George Bass became one of them, gave advice with their medicine, and that as the medicine was perhaps for the most part coloured water with a kick in it, the advice also, by force of habit, became liberally diluted with words, comforting or assuring, the curative efficacy of which may not have been altogether without avail.

The life and prospects of an apothecary, however, were not attractive to George Bass; and, if we now pause to take stock of the man from such contemporary descriptions as are available, we shall realize why. Our only portrait of him is taken from a miniature, which is reproduced in the Historical Records of New South Wales, Volume V, page 14, where the engraving is described as being "from an old miniature". I regret that I have not been able to trace the present whereabouts of the original. It is not in the Mitchell Library, nor in the Melbourne Public Library. One of the librarians of the Mitchell Library, however, has directed my attention to the fact that the late J. W. Gregory, formerly Professor of Geology in the University of Melbourne, in reproducing the portrait in his book, "The Geography of Victoria", stated that the original miniature was in the possession of J. J. Shillinglaw. That gentleman, who published a volume of "Historical Records of Port Phillip" (1879), and who took a very keen interest in Australian history, was a collector of books, manuscripts and other material of the kind. Whether this miniature of Bass was sold after his death I am not aware. As our librarians do not know where it now is, I presume that it is in private possession. It ought, surely, to be in one of our great libraries; and if these remarks should by any chance come to the notice of the present owner, I venture respectfully to suggest that the authentic portrait of one of the important explorers of Australian seas should find its permanent home in a public institution.

The picture, as we have it in the reproductions, shows a man of noble countenance, radiating keen intelligence and power. The face is full, the brow broad and high, the mouth refined, with a sense of humour, as it seems, playing upon the line of the lips; the eyes are large and eager. I judge from the reproduction of the miniature that at the time when that was painted he wore his hair powdered, as was commonly done at the time. The word "penetrating" occurs in two personal descriptions of him. His father-in-law spoke of his "very penetrating countenance", and Matthew Flinders, his intimate friend and the companion of several voyages, refers to him as "the penetrating Bass". John Hunter, the Governor of New South Wales, who knew him well during the voyage from England to Australia, and during his residence in New South Wales, wrote that he was "a young man of a well-informed mind and active disposition", who manifested "much ability in various ways out of the line of his profession". His father-in-law also tells us that he stood six feet, and was dark complexioned and handsome. The few letters written by him which we have are all direct, clear statements of his adventures, with occasionally playful touches, as, for instance, when he tells his brother-in-law, Captain Waterhouse, that the women of Tahiti were not nearly so attractive as they had been represented to be, so that his wife, Captain Waterhouse's sister, had no need to be alarmed when she heard that he had been amongst them. His allusions to letters which he was writing to other persons suggest that he was a fairly diligent correspondent, but apparently his epistles have for the most part disappeared. One letter, hitherto unpublished, I shall read presently, with a comment which may on some points help us to appreciate Bass the more.

Exactly how long Bass practised as an apothecary in Lincolnshire we do not know, but if we assume that he obtained his diploma in London when he was, say, twenty-five years of age, and that he began his professional career then, we conclude that the year 1788 saw him established, he having been born in 1763. An inactive life was repugnant to his temperament. His mother bought him a share in a merchant ship, in which he went to sea. The ship was wrecked. When next we hear of him he had been commissioned as a surgeon in the Royal Navy, and ordered to sail in His Majesty's ship *Reliance*, which was to convey John Hunter to Sydney, in succession to Phillip as Governor of New South Wales. The ship put to sea on February 15, 1795, and arrived at Port Jackson on September 7.

A midshipman on the *Reliance* was another Lincolnshire man, Matthew Flinders, the son of a medical practitioner at Donington, not far from Boston. That these two young men should at once become fast friends was the most likely of probabilities. Each had "the county" bond, which counted for more in those days than it does now; the son of a medical man and the young surgeon had that further professional ground of interest; and, above all, both Matthew Flinders and George

Bass were keen on the pursuit of geographical discovery, for which, evidently, there were great opportunities in New Holland.

That both Bass and Flinders should have entered upon this voyage in the *Reliance* with the determination to use their opportunities when they arrived in Sydney, to set out to make geographical discoveries, may seem curious; but there is no doubt about the fact. Bass had brought with him from England a small boat, which he named the *Tom Thumb* on account of her size. She is described by Flinders himself in his journal as "a little boat of about eight feet keel and five feet beam which had been brought out by Mr. Bass and others in the *Reliance*". As some doubt has been expressed about the measurements of the *Tom Thumb*, it is as well to point out that the phrase "about eight feet keel" means literally what it says. It was not the boat itself which was eight feet long, but the keel; the length of the boat might overlap the eight-foot keel both fore and aft. In any case, a six-foot man, as Bass was, would not find voyaging in this little craft very comfortable. It is also necessary to mention that the original *Tom Thumb* was duplicated after arrival in Sydney. In the unpublished journal of Matthew Flinders, the manuscript of which is in the Mitchell Library, there is the record that after the first *Tom Thumb* had been used for making the short coastal voyage which resulted in the discovery of George's River, the two friends made their second adventure, to Port Hacking; and Flinders wrote: "As *Tom Thumb* had performed so well before, the same boat's crew had little hesitation in embarking in another boat of nearly the same size, which had been since built at Port Jackson."

These two short voyages along the New South Wales coast were made by Bass and Flinders in 1796. At this point it will, I think, be most convenient to read the hitherto unpublished letter by Bass, written three years later. I quote it now because it contains another piece of clear evidence that Bass had formed the intention of undertaking explorations before he embarked in the *Reliance*. The letter was found amongst the papers of Sir Joseph Banks in the Mitchell Library, Sydney; and I am indebted to the trustees of that great Australian institution for the opportunity of making it public on this occasion for the first time. The passage relating to Bass's intentions are relevant to the point upon which I have just been dwelling.

SYDNEY, New South Wales, May 27, 1799.

Sir,

Although I am not personally known to you, you are not, I believe, entirely ignorant of my name. It was mentioned to you by Mr. Neville of Wellingore in Lincolnshire in the year 1794, and I in the summer of that year called at your house in London, but you were at that time in the country. Shortly afterwards His Majesty's ship *Reliance* of which I was then and have ever since been the surgeon sailed from the river Thames on her voyage to this country.

I arrived here with the professed intention of exploring more of the country than any of my predecessors in the colony; so that it may be expected I have not been altogether idle.

Besides enlarging its geography, I was anxious to procure new or rare specimens of subjects in natural history;—a pursuit well agreeing with the bent of my inclination, but badly adapted to the little extra professional knowledge I possessed. I attempted it, however; but soon learnt that the traveller here whose finances deny him the assistance of horses or carriages is too much incommoded by his own provisions and firearms to be able to collect specimens of any kind.

To range the woods in quest of and to collect rare subjects has, therefore, after many trials been necessarily relinquished as impracticable. I have had but little better success in my excursions by water.

Governor Hunter informs me that he has communicated to you the result of some of them and more particularly of one in a whaleboat made in the latter end of 1797 and the beginning of 1798, when, during an absence of three months, I discovered in latitude 39° S. a strait which divides Van Diemens Land from New South Wales.

In the course of this expedition I collected at different times some few new subjects, both animals and plants; but they were from time to time destroyed by rain or by the seas which in bad weather the boat was constantly shipping; so that none remained upon my arrival at Port Jackson.

In the latter end of the year 1798 Governor Hunter being desirous that the Strait I had discovered should be further explored and surveyed found a volunteer for this service in Lieut. M. Flinders of the *Reliance*. Him I accompanied to renew my researches after the soils and natural productions of the places we might find it convenient to anchor in. A sloop of 20 tons burthen was fitted for the purpose.

We passed through the strait and returned by the South Cape of New Holland.

In this voyage of fourteen weeks I collected those few plants upon Van Diemens Land which had not been familiar to me in New South Wales, and have done myself the honour of submitting them to your inspection. Their state of preservation is by no means such as I could have wished, but it arises, I trust, more from my ignorance and from the inconveniences of the small sloop, than from any want of desire to present them to you in a more acceptable form. The box which contains the plants, contains also: some stoney masses apparently formed of calcareous and siliceous earths, and which are, most certainly, parts of the stems of large brushwood in a petrified state; but how they came so seems to be from the situation of the place they were found in almost inexplicable. Some short pieces of the same brushwood in its natural, unpetrified state also accompany them.

Two skins and a skull of the wombat a quadruped unknown here until the middle of the year 1797. It was first found upon Furneaux's Islands in latitude 20° S. by the crew of a ship that was wrecked there. It is, however, now known to inhabit the mountains which lie a few miles west of this settlement.

As I wish to arrange the account of the wombat and of the petrifications in the best form I am able I beg to defer doing it until my arrival in England.

The box holds also the skins of two birds; one a rare or new pheasant shot near the Hawkesbury river, the other a runner which a greyhound after some length of chase caught near the Derwent River in Van Diemens Land.

A tin cannister is filled with metallic particles brought from one of Furneaux's Islands.

My state of health does not permit me to return to England by Cape Horn and the high southern latitudes. I have, therefore, quitted the *Reliance* to take a warm weather passage by the way of China, but shall send my little collection by her; so that it will arrive before me. It is, then, that the box should not reach you before the account of what it contains, that I have taken the liberty of writing this long letter.

Sir, I am

Your very humble servant,
GEO: BASS.

Several phrases in the letter are in the original manuscript underlined in pencil, most probably by Sir Joseph Banks (in the reproduction of the letter these phrases are printed in italics). That inference is made because the phrases referred to are those referring to soil, plants and birds. The word "runner", underlined by Banks—the bird which a greyhound caught near the Derwent River—is the name commonly used in the fen country of England (the Lincolnshire fens and the Norfolk broads) to designate birds of the rail family; perhaps in this case the allusion was to the pectoral rail of Australian ornithology.

Of Bass's experiences as a medical man while he was in Australia there is very little to be said. He was the surgeon of His Majesty's ship *Reliance*, but had no official professional standing except on board that ship, or unless called upon to render service as a medical officer of the British Navy in any other ship. The medical officers under the Government of New South Wales at that time were Surgeon William Balmain, after whom a suburb of Sydney is named, and Surgeon James Thomson; whilst the Surgeon of the New South Wales Corps, then on duty, or defying authority from time to time, in Sydney, was Surgeon John Harris. I can find only one instance of Bass's being concerned in a medical matter ashore, and that one is interesting enough to be mentioned.

In 1801 a duel was fought between Lieutenant Colonel Paterson, of the New South Wales Corps, and the redoubtable John Macarthur. They fought with pistols. Macarthur escaped injury, but shot Paterson in the arm. As he was not out of danger a week after the ball was extracted, Bass was called to consult with Harris and Thomson, and signed a report to the Governor upon the case.

Except for that incident, we may say that his career was uneventful from a medical point of view while he was in Australian waters.

The great event of Bass's life was the discovery of the strait which bears his name; and that deserves particular attention.

The *Reliance* being in need of repairs, there was nothing for Bass to do until she was ready for sea again, and he expressed to Governor Hunter a desire to be employed in any way that could contribute to the benefit of the public service. Hunter inquired in what way he was desirous of exerting himself. Bass replied that nothing would gratify him more than to be given the use of a good whaleboat, with permission to man her with volunteers from the King's ships. Hunter therefore, as he reported to the Secretary of State, furnished Bass with an excellent boat, well fitted, victualled and manned to his wish, "for the purpose of examining the coast to the southward of this port as far as he could with safety and convenience go".

Although Hunter accorded to Bass full credit for the important discovery which he made on the ensuing voyage, and himself gave the name of Bass Strait to the water between southern Australia and

Tasmania, it is but just to him to make it clear that Hunter had previously been convinced that Cook's chart of this part of the Australian continent was faulty, in that it showed continuous land between the mainland and the southern point of Tasmania. Cook had been misled by Furneaux, the captain of the *Adventure*, who, becoming separated from Cook's own ship (the *Resolution*) in 1773, and entering the eastern end of what is now Bass Strait, afterwards reported to Cook that he was satisfied that there was no strait there. Hunter was of a different opinion. He had been captain of the *Sirius* in 1789, when that ship was sent by Phillip on a voyage from Port Jackson to the Cape of Good Hope to purchase supplies. In his published account of that voyage, 1793, Hunter had plainly said that, from the easterly set of the current when passing the region where Furneaux made his observations, he judged that "there is every reason to believe that there is in that space either a very deep gulf or a strait, which may separate Van Diemen's Land from New South Wales". It is extremely likely that when Bass was discussing his plans with Hunter, the Governor mentioned this hypothesis to him. It would, indeed, be absurd to suppose that he did not. Hunter was as eager that the whaleboat voyage should be successful as Bass was. It did not detract from the skill and courage displayed by Bass in the command of the expedition that Hunter afterwards pointed out that he had "long conjectured" that a strait would be found there; and that he had a real admiration for Bass is clear from his description of him as "a man of considerable enterprise and ingenuity, a strong and comprehensive mind with the advantage of a vigorous body and healthy constitution".

The whaleboat used for this adventure was built in Sydney. She was twenty-eight feet seven inches long, head and stern alike, as was the case with all whaleboats. Her timbers were of banksia wood, with a lining of cedar. She was fitted for eight oars, but his crew numbered only six. Bass left Sydney at six o'clock on the evening of Sunday, December 3, 1798, his men rowing out between the heads, and then, the wind being favourable, they set the sails and stood to the southward. We have his own journal of this memorable voyage. It is a business-like record of occurrences and observations, with no purple patches, no display of a sense of doing anything very important, no record of thrills when the boat reached a part of the coast never before seen by Europeans. The entries are in good, clear, appropriate English. When anything unusual was seen, it was recorded with scientific accuracy. Observations were made of the nature of the country traversed. When patches of land which appeared to be good for cattle were seen, those facts were carefully noted, because grazing ground might be useful for the young colony at Sydney. When a touch of description was necessary the words used were few and apt. Once Bass complained of "persecution from foul winds", again of great seas "running very

hollow and irregular", of how "heavy squalls with rain fed the gale", and the entrance to Twofold Bay was, he said, distinguishable "by a red point on the south side of the peculiar bluish hue of a drunkard's nose". In this journal Bass never wrote for anything like literary effect, but always to convey a terse description of the things which he thought it necessary to make clear—the "no flowers by request" style of writing that Leslie Stephen was said to require from his contributors to the "Dictionary of National Biography". But Bass was quite confident about the accuracy of his observations. Thus, after commenting upon the few openings in the coast which were suitable harbours, he wrote: "I will venture to affirm that whoever may in future look there for any", that is, for any more than he had mentioned, "will look in vain". And Bass was right. There are no more. The natives whom he encountered on the voyage came to him and his men with little hesitation, "the usual signs of friendship being offered and accepted on each side". By their manner he concluded that they had never seen white men before, or even heard of them; and in one comprehensive sentence he said that "the men, though thieves, are kind and friendly, and the birds upon Furneaux Island have a sweetness of note unknown here", that is, unknown at Port Jackson.

On January 2, 1798, at seven in the morning, Bass discovered Wilson's Promontory. In his journal he called it Furneaux's Land, from the belief that this was the land which Captain Furneaux, of the *Adventure*, had seen in 1773. But later Flinders convinced his friend that it was impossible that Furneaux could have been so far into the strait as this, whereupon Governor Hunter named it Wilson's Promontory "at our recommendation", Flinders wrote, "in compliment to my friend, Thomas Wilson Esq., of London". Wilson was a merchant who had an interest in the Australian trade, though nothing more definite is known about him.

On the evening of January 5 the whaleboat entered Westernport, which Bass so named "from its relative situation to every other known harbour on the coast". Twelve days were spent in the port, because the bad weather made it imprudent to venture into the open sea again until the storm abated. It was Bass who noted the resemblance of the eastern point of Cape Woolamai to a snapper's head.

When the boat left Sydney Bass carried provisions for six weeks. He had now been at sea a month and two days, and had the return voyage to make. It was clearly impossible for him to pursue the coast further westward. If he had done so, he would, of course, have discovered Port Phillip. But prudence demanded that he should lose no time in making his way back to Sydney. Even so, it was necessary to shoot and salt down some petrels for food. His journal does not mention that his people suffered privations from lack of food; indeed, in his last entry, on February 25, he states that his men were "inclined to push for home", so that, with-

out waiting for a favourable breeze to fill the sails, "we got upon the oars and rowed up to Port Jackson when we entered the Heads".

Bass's journal is confined to the narrative of the voyage and description of the country traversed, and does not mention an incident which he reported to Governor Hunter, who referred to it in an official dispatch.

On a small island near Wilson's Promontory a party of escaped convicts was found. Most of them were Irish convicts, who had seized a boat, stolen stores, and made a dash for liberty through Port Jackson Heads. Their hope was to find an island where the ship *Sydney Cove* was believed to have been wrecked, repair her, and then sail away for some place beyond the probability of rearrest. When Bass found them, they were nearly in a starving condition, their clothing was in tatters, and their only food such seals and petrels as they could capture. Only seven of them were upon the island; their companions had deserted them and sailed away in the boat, to meet their own doom within a few days. Bass could do little to relieve the distress of these unhappy men. His boat was not large enough for the seven, but he did take on board one who was very old and another who was sick. To the remainder he gave as much food as he could spare, a musket and ammunition, fishing lines and hooks, and a pocket compass. Then he conveyed them to the mainland, and advised them to try to make their way round the coast to Sydney.

Undoubtedly they perished by the way; no other fate was open to them. It was scarcely conceivable that they could keep themselves alive on a journey through rough and trackless country for more than 500 miles.

Bass had not positively demonstrated that Van Diemen's Land was separated from the mainland of New Holland, though his voyage to Westernport had shown that to be extremely probable. Demonstration required that Van Diemen's Land should be circumnavigated. Fortunately he was able to take part in the voyage of the *Norfolk* under the command of his friend, Matthew Flinders, in October to December, 1798. Bass's own account of this voyage was lent to Colonel David Collins, who summarized it in his "Account of the English Colony in New South Wales". The original manuscript is in the Mitchell Library. Collins says, after mentioning the return of Bass and Flinders, that as the result of the voyage was to ascertain the existence of a strait between Van Diemen's Land and New Holland, it was desirable to enter with some degree of minuteness into the particulars of it; "and the writer of these pages feels much gratification in being enabled to do this, from the accurate and pleasing Journal of Mr. Bass, with the perusal and use of which he was favoured". It is clear from the journal that Bass, having no responsibility for the command, was better able to devote himself to the study of plants, birds and animals than he had been on the Westernport expedi-

tion. The flights of curlew and plover "of a beautiful feather" delighted him. His observations on trees, flowers, rocks and soil are quite considerable. He gives several pages to a minute description of the wombat, with exact measurements of its body. This description is that of an anatomist-naturalist. There are occasional touches of humour, too; as in the passage describing the hundreds of black swan swimming on the River Tamar. The "swansong", "so celebrated by the poets of former times, exactly resembled the creaking of a rusty alehouse sign on a windy day". Very few of the natives of Tasmania were seen, though Bass was eager to meet with them. From the little he saw of their huts and canoes, he judged that they were inferior to the aboriginal inhabitants of the mainland. Their condition seemed to him to be wretched; but then he reflected that "happiness, like everything else, exists only by comparison with the stage above and the stage below".

The observations on the flora and fauna, the rocks and the geographical features of Tasmania were so full and interesting as to establish the claim which we may make for Bass, to have been the first man who brought a trained scientific intelligence to bear upon natural phenomena in this country.

"To the Strait which had been the great object of research", Flinders commented, "and whose discovery was now completed, Governor Hunter gave, at my recommendation, the name of Bass Strait. This was no more than a just tribute to my worthy friend and companion for the extreme dangers and fatigues he had undergone in first entering it in the whaleboat, and to the correct judgement he had formed, from various indications, of the existence of a wide opening between Van Diemen's Land and New South Wales."

I shall not dwell upon Bass's ineffectual attempt to find a way across the Blue Mountains in 1796, nor upon his discovery of coal in New South Wales, at Illawarra, in 1797. Both illustrate the energy and courage of the man, his inability to endure inaction, and his desire to make his adventures useful. Those characteristics have, I hope, been sufficiently proved by what has been said about his Westernport voyage and his share in the voyage of the *Norfolk*; and it seemed better to dwell upon them because of the especial reason why this Association determined to honour the memory of the first medical man who had any connexion with Victoria.

But I must make a few observations upon the probable fate of Bass. He returned to England in 1799, and married there the sister of Captain Waterhouse. In England he became part owner of the brig *Venus* and brought her out to Australia, intending to use her in what it was hoped would be profitable commercial ventures. We know that he took the *Venus* on two voyages to Tahiti, to fetch pork for the settlement at Sydney, and that he prepared plans for establishing fisheries on the south coast of New South Wales. Then, in 1803, he went on a voyage to Peru, at that time a Spanish

possession, and never returned. What became of him is not known and probably never will be.

Any suggestion as to the fate of Bass must, therefore, be hypothesis, based upon such evidence as is available. In my "Life of Matthew Flinders", published in 1914, I ventured to make the suggestion that Bass, having brought out a cargo of goods to Sydney, which he was unable to sell there, determined to try to introduce them into the Spanish American colonies, where, owing to the limitations on trade imposed by the Spanish Government, good prices might be realized. That, of course, meant smuggling them in. I based that hypothesis upon these facts. In a letter of February, 1803, Bass wrote that he was about to sail "on another pork voyage, but it combines circumstances of a different nature also". And he added: "Speak not of South America to anyone of your family, for there is treason in the very name." He also wrote: "If our approaching voyage proves at all fortunate in its issue, I expect to make a handsome thing out of it and to be much expedited on my return to old England." I can make nothing out of these hints unless Bass was about to enter upon a venture which would, he knew, be attended with considerable risks, but which, if successful, would realize handsome profits. There was neither much risk nor much profit in trading in Tahiti pork. We have, then, a young and ardent man, recently married, and evidently desirous of acquiring a better income than he earned as a naval surgeon; and he had made up his mind to take the ship of which he was part owner to Spanish America, in the hope of selling there at good prices the articles which he had been unable to sell profitably in Sydney. It must have been a fairly large cargo, having regard to the size of the ship, for Bass wrote of it before he arrived in Sydney: "The little brig is as deep as she can swim, and as full as an egg."

The article on Bass in the "Australian Encyclopedia" mentions, correctly, that early in 1805 the brig *Harrington*, which had been privateering on the South American coast, reported having heard that Bass's ship had been captured by the Spaniards, and Bass himself sent to the mines of Peru. The writer of the article, who did not accept my theory of Bass having engaged in the contraband trade, made the comment: "This was quite in accord with the rough and ready procedure of colonial governments in those days, and may be accepted as true." But why should Bass have been captured and sent to the mines as a punishment if he was not engaged in an illicit traffic? It is quite true that at an earlier date, under the Hapsburg sovereigns of Spain, it was illegal for any foreigner to trade with the Spanish colonies. But that was not the case at the beginning of the nineteenth century. Spanish colonial methods, as a matter of fact, were not so rough and ready as imputed. It is not conceivable to me that a ship would have been seized, and her commander and crew sent as convicts to the mines, unless they were by some authority found guilty of some offence against the commercial law of Peru.

Moreover, records of ships were kept at Spanish ports. I may illustrate from another instance. Some years ago, Professor Masson's daughter, now Mrs. Walter Bassett, wrote a paper on the escape of Thomas Muir, one of the "Scottish martyrs" transported to New South Wales, from that country in an American ship, and his subsequent adventures in Mexico. It was so good that I advised Miss Masson to send it to the *American Historical Review*. The editor of the review, Professor Franklin Jamieson, who is now the keeper of the manuscripts in the Library of Congress, also thought the paper good, but not quite complete. Some further information was necessary about Muir's experiences in Mexico. So he caused researches to be made in Mexico, and found valuable additional information, which he added to the article, and it was published as by Miss Masson and Franklin Jamieson. There was no great difficulty in that case in finding information about the ship *Otter*, in which Muir got away from Sydney and reached Mexico; nor, I think, would there be any difficulty in finding information about Bass's ship, the *Venus*, if she had been forfeited in Peru and her commander punished.

I have read through the documents again very carefully for the purposes of this account of Bass, and I still think that Bass was engaged in an attempt to sell a cargo of contraband in South America, and I adhere to that view despite the fact that Governor King provided him with a certificate declaring his full belief that Bass's "sole object in going there will be to procure animal food, live stock for breeding and such other articles of food as he may be allowed to purchase without any view to private commerce or any other view whatever". If, now that Bass was armed with that certificate, the officials at any Spanish American port had seized his vessel and imprisoned him, unless he had contraband goods on board, it certainly would have been a gross act of perfidy, and there should have been some record of what was done. But no such record has come to light, although I know that inquiries have been made.

Another hypothesis is, however, open to consideration. Did Bass reach South America at all? Captain Campbell, of the *Harrington*, reported that he had heard that Bass was treated as described; but did he really know anything beyond rumour? He was himself privateering off the South American coast. We do not know from what sources he gained information about Bass. He did not formally report to the Governor of New South Wales that he had heard of Bass being captured. Our information on that point is very vague. It consists of a paper which was in the possession of a London solicitor, dated May 10, 1811—eight years after Bass's voyage—which read:

In or about 1803 a brig named the *Harrington*, Captain William Campbell master, arrived at Port Jackson from the coast of Peru, and brought intelligence that the *Venus* had been taken by Spaniards, that Mr. G. Bass and Mr. Scott, mate, had, together with the crew, been either sent to the mines or further inland. A Spanish gentleman

with whom Captain Campbell was trading told him that Mr. Bass was taken when landing in his boat, and that the vessel was seized afterwards. Captain Campbell had been to Quito, to Valparaiso and to Valdivia, but it is uncertain at which of those places the affair happened.

But why did not Campbell report the matter to the Governor of New South Wales? That would have been the proper thing for him to do, but he did not.

We can but speculate in the absence of dependable evidence; and I now have some doubt whether the South American story is in any respects trustworthy. The overloaded *Venus* may have foundered in a storm in the Pacific. The most we can say about the fate of Bass is that really we know nothing. As far as positive evidence goes, he vanished from human ken when he sailed in the *Venus* from Sydney in 1803, vanished, but leaving the memory of a handsome, gallant, adventurous Englishman who was a member of the profession to which those belong who have, 133 years after he sailed to his doom, placed in this building a memorial to him. He is one of the shining heroes of Australian discovery, but he was also a man of science and the first medical man to have any connexion with Victoria; and that is his especial claim for recognition here.

THE INFLUENCE OF EXTERNAL TEMPERATURE ON THE BLOOD SEDIMENTATION RATE.

By DAVID B. ROSENTHAL, M.D. (Melbourne),
M.R.C.P. (London),
Medical Superintendent, Gresswell Sanatorium,
Mont Park, Victoria.

DURING the investigation of the physico-chemical factors involved in the blood sedimentation test, it was found that the influence of the temperature at which the tests were conducted was more profound than the references in the literature on the subject would seem to suggest.

In his monumental treatise, "The Suspension Stability of the Blood", Fahraeus⁽⁶⁾ failed to record any observations on the effect of external temperature, although considerable attention was directed to the effect of "heat treatment" of the blood and its constituent parts. Although of great interest, his conclusions do not appear to be relevant to this subject.

In a review of the blood sedimentation rate in relation to gynaecological practice, Benischek and Douglas⁽⁹⁾ emphasized that:

The blood must be kept at average room temperature. . . . Keeping it in the icebox, we found almost the same results as at room temperature, but if it is kept in the incubator, a highly increased speed is produced.

In stating their results, these authors gave the room temperature with the sedimentation reading. (As will be seen below, experiment shows that the alteration of rate of sedimentation is fairly regular over the range of temperature of the investigation.)

The work of Gordon and Cohn⁽⁷⁾ was more detailed. Utilizing temperatures of 10° C., 23° C.

and 37° C., they found that the effect of external temperature on sedimentation rate was definite, irrespective of the diseased condition present, or of the original sedimentation rate. "There is an acceleration in the sinking velocity with an increase in the external temperature, and a marked diminution in the rate with a decrease in the temperature." They further noted that the effect was of a transitory nature, disappearing completely on removal of cause, in contrast with the effect of prolonged heating—the "heat treatment" of Fahraeus. They emphasized the importance of seasonal conditions in affecting the results obtained, and suggested that a temperature of 23° C. (73° F.) should be selected as standard for the test.

Walton⁽¹³⁾ has noted the effect of the room temperature, a rise of room temperature giving increased speed of sedimentation, and suggested that a standard temperature of 19° C. to 23° C. (66° F. to 73° F.) should be used.

Harvey and Hamilton⁽⁸⁾ were content to dismiss the matter in a few words: "Factors influencing sedimentation rate include vibration, temperature, time of day, and so on . . .", but suggested a room temperature of 17° C. to 20° C. (62° F. to 68° F.).

Considering the voluminous literature on the complex subject of blood sedimentation, it appears that insufficient attention has been paid to the variations in results attributable intrinsically to the influence of external temperature. Few writers, indeed, mention the matter, whilst others deem it sufficient to perform the test "at room temperature".

It is not intended to discuss here the position in clinical medicine of the measurement of the sedimentation rate of blood, but rather to demonstrate the importance of recognizing that the factor of external temperature cannot be ignored when such measurement is undertaken.

Experimental Data.

The method of measuring the sedimentation rate was that of the Cutler technique, for details of which reference should be made to Cutler's original description,⁽⁴⁾ or to the succinct account given by James⁽⁵⁾ in a previous issue of this journal.

It will be sufficient to mention that the important points are: (i) the shape of the curve; (ii) the sedimentation index, the height of the column of clear plasma at the end of one hour; (iii) the sedimentation time, defined by Cutler as "the number of minutes that elapse before the period of packing of the red blood cells sets in". To avoid ambiguity, the sedimentation time is read, as suggested by James, as the time at which it is first noted that the fall in five minutes has been one millimetre or less. Obviously, in slowly sedimenting specimens, there is no reading to correspond to the sedimentation time.

For purposes of convenience in handling and observation longer tubes of eleven centimetres length were used, but the tests done in the investigation otherwise conformed rigidly to Cutler's technique. Care was taken to ensure thorough cleanliness of the tubes, which were boiled in soda solution

after use, washed and stored in very dilute nitric acid solution. Before being used, each tube was thoroughly washed, rinsed with sodium citrate solution and drained ready for use.

The accompanying photograph (Figure I), taken during the course of a test, shows the simplicity of both the apparatus used and the method adopted. The tubes were floated in conical flasks containing water at the temperatures chosen—40°, 60°, 80° and 100° F. (4.5°, 15.6°, 27° and 38° C.) respectively, the tubes being passed through and supported by broad cork floats.

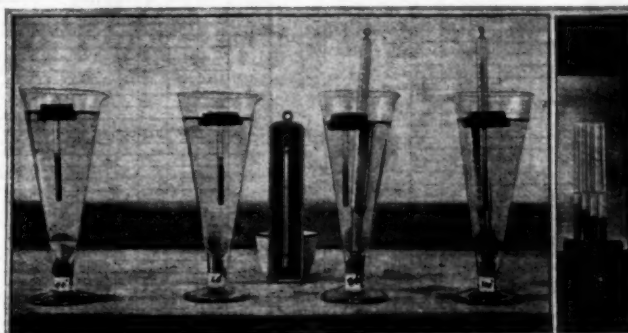
The temperature was maintained at a constant level by repeated replacement of the cooling contents of the flasks with water at the required temperature, ice being used in the flask at 40° F. (4.5° C.). The thermometers used were of the standard "dairy" type. In flasks of ordinary dimensions the temperature range from the higher to the lower levels was found to be considerable—up to 10° to 15° F. (5.5° to 8.3° C.)—and the temperature measurements, which were noted opposite the level of the tubes containing the blood, were consequently approximate, a variation of 5° F. (2.7° C.) either way occasionally during the test being unavoidable.

The tubes having been heated by immersion to the desired temperature, one cubic centimetre of citrated blood was poured from a common source, such as a ten cubic centimetre syringe, into each tube, care being taken that the height of the column of blood was exactly the same in each tube for any one sample. Measurements were made every five minutes for one hour, and the results plotted on "Cutler" graph paper.

In Figure I (A) the variation in degree of sedimentation during one test for each temperature will be seen.

Figure I (B) shows the relative degree of sedimentation in another specimen at the end of one hour. From left to right, the temperatures were 40° F., 60° F., 80° F. and 100° F., and the measurements, that is, the sedimentation indices, were respectively 10, 17.5, 22.5 and 25 millimetres.

Table I shows the results obtained with sixteen samples of blood taken from patients chosen to give a wide range of values.



(A)

(B)

FIGURE I.

The figures in brackets represent the sedimentation time, when such was readable, whilst a "parallel" reading at room temperature is given for one and two hours for each sample. It will be noted that in some cases, for example, Case VIII, the sedimentation index at 80° F. is the same as the reading obtained at room temperature in two hours.

Charts I, II, III and IV show the curves obtained for each temperature in Cases X, XI, XII and XX, representing a slow, medium, fast and very fast fall respectively.

In all sedimentation curves, three phases may be recognized.⁽¹⁾ They are: (a) A "slow" phase, usually of short duration. (b) A phase in which the velocity of fall has reached its maximum and is regular; this indicates the true sedimentation velocity. (c) A phase of "slowing", which goes on till fall ceases and corresponds to cell "packing".

The delay in reaching the maximum sedimentation velocity, as measured on the first phase of the curve, is due to: (a) The time taken for the effects

TABLE I.

Case Number.	Sedimentation Index, with Sedimentation Time, at				Room Temperature. ° F.	Fall in Millimetres at Room Temperature in	
	40° F.	60° F.	80° F.	100° F.		One Hour.	Two Hours.
I..	10.7	23.0 (55)	26.5 (45)	28.5 (40)	58	23.0	27.0
II..	2.0	4.0	6.0	8.0	58	4.0	7.0
III..	2.0	3.0	4.0	5.5	52	2.0	5.0
IV..	6.0	12.0	13.5	15.0 (45)	52	11.0	15.5
V..	6.0	12.5	17.5	20.0	53	12.0	19.0
VI..	1.5	8.5	12.0	14.0	53	5.0	15.0
VII..	2.0	6.0	9.0	11.0	54	6.0	10.0
VIII..	3.0	7.5	10.0	12.5	52	5.0	10.0
IX..	14.5	24.0 (50)	26.0 (35)	27.5 (30)	52	23.5	25.0
X..	2.0	5.0	7.5	9.5	52	4.0	8.0
XI..	4.0	14.0	20.0	23.0 (40)	58	14.0	22.0
XII..	16.0	25.5 (45)	27.5 (35)	28.5 (25)	58	25.0	27.0
XIII..	2.0	8.5	13.0	17.0	56	6.5	17.0
XIV..	12.5	26.0 (50)	28.0 (40)	28.0 (30)	56	25.0	27.0
XV..	2.0	5.0	7.0	11.0	58	5.0	11.0
XVI..	16.0	25.0 (50)	27.5 (40)	28.0 (30)	58	25.0	28.0

of agitation of the contents of the tube (at the start of each test) to be dissipated, that is, to reach initial rest. (b) The time taken for the falling

the summation of the effects due to the height of the column of blood and the cell-volume for the particular specimen.

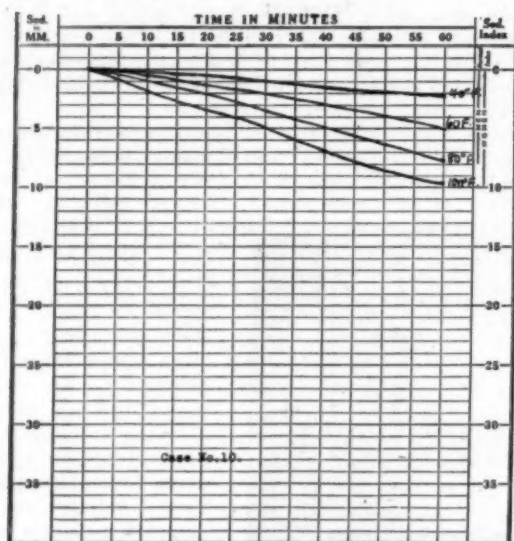


CHART I.

bodies to attain the maximum velocity from initial state of rest. (c) The time taken for the "stable" rouleaux formation and grouping in clumps of the red blood cells, for the particular specimen of blood,

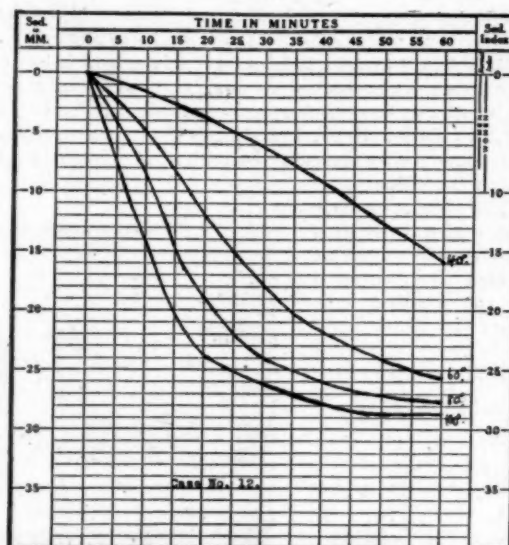


CHART III.

It was noted that in the tube of blood at 40° F. the first phase of the curve was markedly prolonged, and in some cases continuation of the experiment for two or three hours was necessary to obtain a

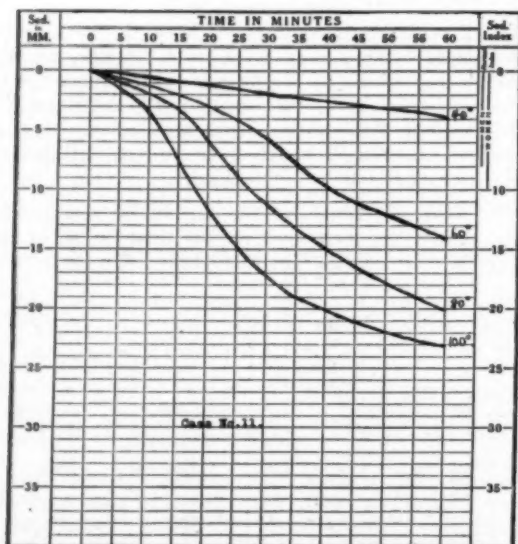


CHART II.

to occur (Fahraeus). (d) The effect of surface tension.

The lengths of the second and the third phases are in inverse ratio to one another, and depend on

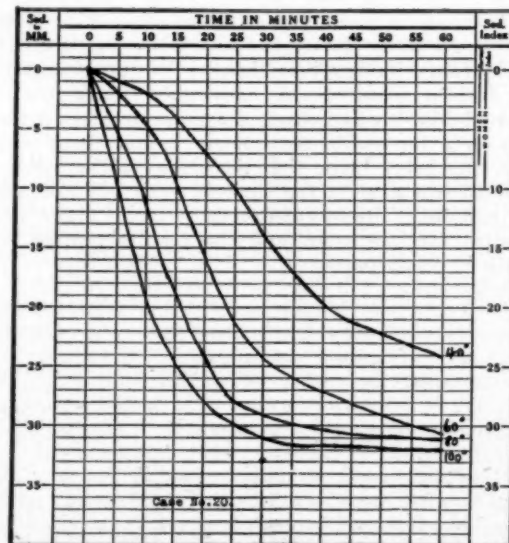


CHART IV.

useful curve. Chart V shows the curves for three hours at 40° F. and 60° F. in Case XIII.

This prolongation of the first phase of the curve at lower temperatures is probably due to the lower

degree of molar activity, the effect of increased viscosity of the plasma in inhibiting movement of the cells, and the possible effect of lower temperatures on the grouping of the red blood cells. It might also be noted that the surface tension of a liquid decreases with rise in temperature.⁽¹⁰⁾ In the warmer tubes the effect of convection currents in the blood column as a modifying influence should not be forgotten.

It was found that at temperatures about and above 110° F. (43.3° C.) very irregular results were obtained, apparently owing to chemical changes in either or both of the two phases of the suspension.

In agreement with Gordon and Cohn, it was found that the test was reversible, that is, if the tubes were allowed to cool, if they were then reshaken and sedimentation was allowed to occur, all at the same temperature, the rate of sedimentation was the same in each tube, although not necessarily the same as when previously observed at that temperature.

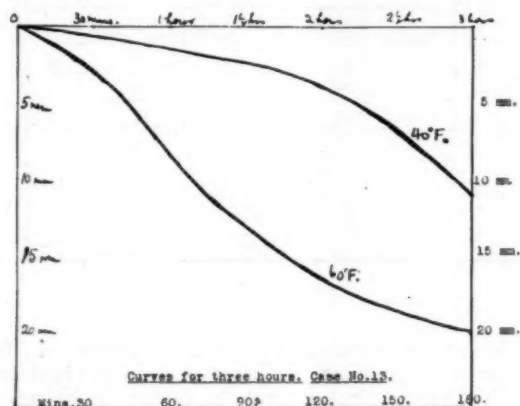


CHART V.

Consideration of the results of the experiments reveals the following salient facts:

1. The rate of sedimentation varies with the temperature at which the test is conducted.
2. The higher the temperature, the more rapid the fall within the temperature range indicated.
3. With a slow fall, the difference in the sedimentation index roughly corresponds to the difference in temperature, for example, Cases II and VIII.

4. With the more rapidly sedimenting blood, as in Case XII, the end-point, which is a measure of the cell volume, gives no real indication of the effect of the temperature on sedimentation rate. Although the sedimentation time may give some assistance in this respect, the effect is evident only when the curve is examined.

It is not intended to criticize here any particular method, but it might be pointed out that, with a judicious selection of temperatures, it is possible to obtain, with practically any specimen of blood, a wide variety of curves.

Theoretical Considerations.

The velocity of the fall of a small spherical object in a fluid medium is expressed in Stokes's law,⁽⁵⁾⁽¹¹⁾ which is given by the equation:

$$V = \frac{2r^2(S-S')g}{9n}$$

where r = radius of sphere, S = specific gravity of spheres, S' = specific gravity of medium, g = gravity constant, n = viscosity coefficient of medium.

The limitations of the application of this basic law, as detailed by Millikan,⁽¹¹⁾ are such as to render its application to our problem only a crude approximation. With this reservation, it will be seen that when the law is examined with the purpose of explaining the temperature effect demonstrated above, the factors that might be influenced to an appreciable extent by temperature change are two only, that is, " r " and " n ".

With respect to " r ", it is easy to observe, under the low power of the microscope, that the red blood cells do not fall as such, but in cell groups the size of which, according to Fahraeus, determines the sedimentation velocity. This has been worked out fully by Fahraeus. Blood with a rapid sedimentation shows marked clumping, even up to 50,000 cells per clump, whilst blood with a slow fall shows little tendency to clump, and the clumps formed adhere very poorly. If the degree of clumping were increased at the higher temperatures, the sedimentation velocity would be correspondingly raised. Although many microscopic examinations have been made, I have not observed any appreciable change in the degree of clumping in any particular specimen at the various points in the temperature scale.

The other possible variable is " n ", the viscosity coefficient of the medium, in this case the citrated plasma.

It is well known that the viscosity of many fluids decreases as the temperature rises.⁽¹⁰⁾⁽¹²⁾ Following the method of Gibson and Jacobs,⁽¹⁰⁾ the change in viscosity of castor oil with change in temperature was measured. Into a column of oil 275 millimetres in height, small lead shot were dropped, and the time taken for the shot to traverse the column was measured with a stop-watch. In this way the viscosity times for the oil at different temperatures were obtained. The results are shown in Table II, which indicates an inverse relationship between the temperature and the viscosity of the oil.

TABLE II.

Temperature.	Time in Seconds. (Average of Ten Shot.)
60° F.	24.2
70° F.	15.5
80° F.	11.4
90° F.	7.6
100° F.	5.7

The results of experiments such as these may be applied to the colloidal state only with considerable reservation. However, Bayliss⁽²⁾ states that the viscosity of blood diminishes "to a large extent" as

the temperature is raised; and indeed increased fluidity of whole blood at higher temperatures may be easily recognized by pouring two samples of blood, one warm and one cold, on to glass slides slightly tilted, and noting the more rapid flow of the warmer sample.

Fahraeus has shown that, in different specimens of blood, the sedimentation velocity bears no relation to the relative viscosity of the citrated plasma. But, in any particular specimen, change in viscosity of the plasma might appreciably affect the sedimentation velocity, other factors remaining unchanged.

Accordingly, investigations of the viscosity of the citrated plasma were undertaken, Ostwald's viscometer method being used. The plasma was obtained by centrifuging part of a specimen of blood, on the balance of which the temperature effect on sedimentation rate was determined, as detailed above. The results obtained with four specimens of blood are set out in Table III. It will be noted that, as stated by Fahraeus, the sedimentation velocity in different specimens bears no relation to the viscosity time of the citrated plasma, for example, contrast the sedimentation rate in Cases XVII and XVIII, which, nevertheless, have similar viscosity times for the same temperatures. The results show that, in the limits defined, the viscosity time progressively falls as the temperature rises, that is, rise in temperature is associated with both an increase in sedimentation velocity and decrease in the viscosity of the citrated plasma.

TABLE III.

Case Number.	Temperature. F.	Sedimentation Index and Sedimentation Time.	Viscosity Time of Plasma in Seconds.
XVII	40	21.0	83
	60	27.0 (55)	75
	80	30.0 (45)	63
	100	31.0 (35)	44
XVIII	40	2.0	85
	60	9.5	68
	80	13.5	55
	100	16.5	46
XIX	40	3.5	110
	60	7.0	76
	80	12.0	58
	100	14.5	53
XX	40	24.0	105
	60	30.5 (55)	80
	80	31.0 (35)	66
	100	32.0 (30)	59

Are, then, the coincidental changes in plasma viscosity and blood sedimentation rate interdependent?

For reasons which will be more fully explained in a later communication, it may be stated that the true sedimentation rate is best represented as a velocity, for example, in millimetres per minute, and can be read from the curve only at the part showing the maximum velocity, that is, in the second phase of the curve.

Alternatively, the sedimentation rate can be expressed in terms of the angle made with the horizontal by the curve at this point of maximum velocity. If this angle be termed θ , then $\tan \theta$ is an expression of the sedimentation rate (Chart VI and Table IV, Case XIX).

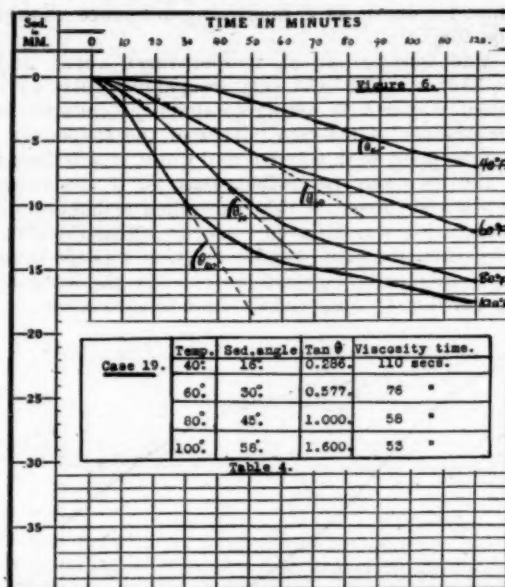


CHART VI.

The curves obtained by plotting graphs of the values of $\tan \theta$ against temperature readings indicate that the change in temperature affects the sedimentation rate in a regular manner. It may be noted that in "slow" curves, values of $\tan \theta$ may approximate closely to those of sedimentation index expressed as a $\frac{\text{distance}}{\text{time}}$ ratio.

If the values of $\tan \theta$ for each of the four temperatures be plotted against the viscosity time of the plasma at the same temperature, there is obtained (Chart VII) a graphic representation of the relationship between sedimentation rate and plasma viscosity, the equation for the curve being of the order $y = a + b.x + c.\log x$, where x, y are corresponding values of $\tan \theta$ and viscosity time, and a, b, c are numerical constants.

It may be concluded that the change in sedimentation rate, due to the temperature variation, is an inverse function of the viscosity change of the plasma.

Discussion.

It has been shown that considerable effect on the sedimentation velocity of blood results from variation of external temperature within the defined limits. As these limits include the range of temperature at which laboratory work is usually

done, in these climes at least, where seasonal variation may range from 48° F. in the winter to 95° F. in the summer, it is important that some standardization be considered if several readings are to be compared.

A sedimentation index of, say, seventeen millimetres, measured on a summer's day, may well be the equivalent of five millimetres in the same specimen on a winter morning; whilst a "diagonal curve" on a hot day might have the same significance as a "horizontal line" during a cold spell.

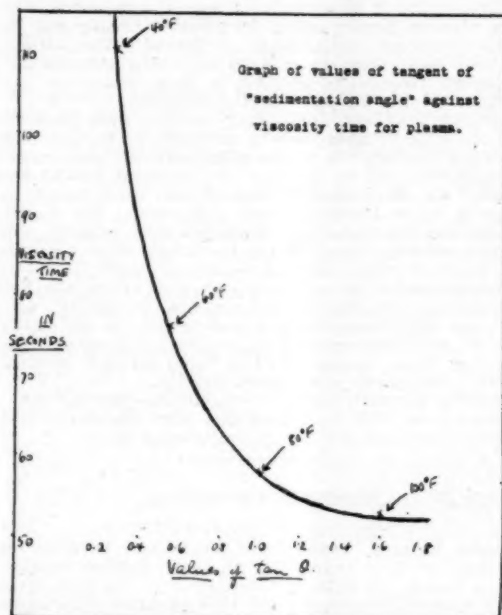


CHART VII.

A standard temperature for the performance of the test is eminently desirable; 20° C. or 68° F. is suggested as a convenient standard. When it is impracticable to perform the test under standard conditions, the practice of noting the room temperature when the readings are quoted should be followed, so that due provision for temperature variation may be made. Mathematical correction for temperature variation at present is not practicable.

It has been remarked that, in rapidly sedimenting blood, the sedimentation index is a measure, not of the sedimentation velocity, but of the cell volume, that is, the hæmatocrit value. The disparity between the sedimentation index and the cell volume indicates approximately to what extent the former is a measure of the sedimentation velocity, and the recording of the cell volume at the end of each test would be a valuable procedure.

By centrifuging the tube, or immersing it in a water bath at about 100° F., the figure for cell volume could be rapidly, if approximately, obtained. The height of the column of cells, that is, of the sediment, quoted as a percentage of the total height of

the blood column (which, in Cutler's method, is approximately five centimetres) is a suitable index for cell volume.

A complete statement on the result of a blood sedimentation test would then read somewhat thus: (i) for "slow" blood: 8 millimetres, 63° F., 55%; (ii) for "fast" blood: 28 millimetres, 40 minutes, 63° F., 40%.

Conclusions.

1. The sedimentation rate of blood is greatly affected by the external temperature, the higher the temperature, the faster the rate.
2. The change in rate is roughly proportional to the change in temperature.
3. The change in rate with alteration of temperature is attributable in part at least to the change in viscosity of the blood plasma.
4. In the absence of any thermometric standard, comparison of tests performed at different times on blood from the same source provides no reliable information.
5. It is suggested that the reading of the "sedimentation index" should be accompanied by that of the room temperature, and of the cell volume for the specimen.

Acknowledgements.

I desire to thank Dr. J. Bell Ferguson, State Director of Tuberculosis, Victoria, for his advice and for permission to publish this report; and Dr. J. H. Bolton, Medical Superintendent, Royal Melbourne Hospital, for his invaluable assistance in undertaking the estimation of viscosity of plasma. To my brother, Mr. N. H. Rosenthal, my thanks are due for his critical survey of the theoretical aspect. I also wish to thank Dr. H. M. L. Murray, late Assistant Medical Officer at the Sanatorium, for his many helpful suggestions and close cooperation throughout the investigations, of which this article is a preliminary communication.

References.

- ① J. L. Baer and R. A. Reis: "The Sedimentation Test in Obstetrics and Gynecology", *Surgery, Gynecology and Obstetrics*, Volume XL, 1925, page 691.
- ② W. M. Bayliss: "Principles of General Physiology", 1924, page 242.
- ③ W. L. Benischek and M. D. Douglas: "Value of Blood Sedimentation Test in Gynecology: Conclusions from 250 Consecutive Cases", *American Journal of Obstetrics and Gynecology*, Volume XIV, August, 1927, page 220.
- ④ J. Cutler: "The Graphic Presentation of the Blood Sedimentation Test: a Study in Pulmonary Tuberculosis", *American Journal of the Medical Sciences*, Volume CLXXI, 1926, page 882; "Graphic Method for Blood-Sedimentation Test; Presentation of 1-c.c. Technique and other Important Modifications and Suggestions", *American Review of Tuberculosis*, Volume XIX, May, 1929, page 544.
- ⑤ G. Lovatt Evans: "Recent Advances in Physiology", Second Edition, 1926, pages 1 to 11.
- ⑥ E. Fahrenius: "The Suspension Stability of the Blood", *Acta Medica Scandinavica*, Volume LV, 1921, page 1.
- ⑦ M. B. Gordon and D. J. Cohn: "Effect of External Temperature on Sedimentation Rate of Red Blood Corpuscles", *American Journal of the Medical Sciences*, Volume CLXXVI, August, 1928, page 211.
- ⑧ W. F. Harvey and T. D. Hamilton: "Studies in Method and Standardisation of Blood Examination: Sedimentation Rate and Sedimentation Volume of Blood", *The Edinburgh Medical Journal*, Volume XLIII, January, 1936, page 29.
- ⑨ H. M. James: "Comparison of the Blood Sedimentation Rate and Vornes Flocculation Test in Pulmonary Tuberculosis", *The Medical Journal of Australia*, August 26, 1933, page 265.
- ⑩ T. M. Lowry and S. Sugden: "A Class Book of Physical Chemistry", 1929.

- (10) R. A. Millikan: "The Electron", 1925, page 91.
 (11) J. Walker: "Introduction to Physical Chemistry", 1927.
 (12) A. C. R. Walton: "Corrected Erythrocyte Sedimentation Test" *Journal of Laboratory and Clinical Medicine*, Volume XVIII, April, 1933, page 711; "Erythrocyte Sedimentation Test: Clinical and Experimental Study", *The Quarterly Journal of Medicine*, Volume II, January, 1933, page 79.

Reviews.

PRACTICAL SURGERY.

THE matter in "A Short Practice of Surgery", by Bailey and Love, is the same as in all other short textbooks of surgery.¹ The manner, however, is very different. This book, as is the case with all other short books on the same subject, is a summary; it is, however, a very unusual summary. Most summaries are very difficult to read, the reason being that the facts are given without the explanations that are necessary to correlate these facts. By some magical means the authors have overcome this difficulty. A great deal is due to the excellent use of light and heavy type and of numerals to mark off the paragraphs. Much is due to the numerous illustrations, many of which make detailed descriptions unnecessary; but most praise must be given to the authors' style. They have the rare gift of being able to give an explanation that is both condensed and lucid. The result is that the book is very readable. It is indeed an outstanding example of the fact that artificial aids to memory, such as the use of different types and of numbered paragraphs, may be made use of without the loss of literary style. We hope authors of similar books will follow suit.

THE MENOPAUSE.

"THE HYGIENE OF THE CHANGE IN WOMEN"² has been written by Isabel Emslie Hutton as the outcome of her desire "that women should acquire a certain amount of knowledge about this phase, so that they may contemplate it with equanimity and live through it in comfort". This is a praiseworthy objective, but one that is unlikely to be realized.

The author has collected a lot of information; in fact, she seems to have told us all there is to know about the condition at the present time. There is rather much for a lay person, but the book should be read and remembered by all medical practitioners.

Medical treatment is not given; all symptoms are described; all of a woman's life is described except birth and death. The author is to be congratulated on her faithful and accurate account.

IONIZATION.

DR. J. NEWTON DYSON has written a sound and well-reasoned book in his "Practice of Ionization".³ In the foreword, by Dr. Cumberbatch, and in the preface there is a well-merited rebuke to the medical profession for the neglect of electricity in both teaching and practice.

The author gives a sound elementary description of electricity, and of the various types of instrument used in ionization. Very necessary stress is laid on the need for protecting the patient from shock when the supply is drawn from the mains, and all other likely pitfalls are

mentioned. The technique for the various applications of the constant and sinusoidal currents is set out with exact detail, and in such a way as to give the beginner a clear idea of what to do, and how to do it.

Dr. Dyson differs from the older writers on ionization in attributing results to the action of the constant current itself, and not to any minute quantities of chemical ions that may be introduced into the body; he gives good reasons for this belief, and describes the proved therapeutic effects of the current.

In dealing with the various ills for which ionization is of value, he gives brief but helpful notes on pathology, diagnosis, and prognosis; he also, where needful, suggests alternative or combined methods of treatment. But there are three striking omissions: in dealing with facial paralysis there is no mention of infra-red radiation, which often acts so dramatically; in *alopecia areata* and chilblains ultra-violet radiation is overlooked. Also, although the book was published in 1936 and the author mentions diathermy frequently, nothing is said about the ultra-short wave machine and the inductotherm.

Perhaps his most interesting results were gained in arthritis and fibrositis, and in paralysis of various forms, including that due to cerebral hæmorrhage and anterior poliomyelitis, also in tinnitus and deafness due to many causes. Of the common human ills good results are obtained in constipation and pyorrhæa. The author's results are illustrated by numerous case records, which are of great help in estimating the worth of the treatment. The index is short, but reasonably complete.

The writing is direct and clear, and avoids the heavy dog-latinisms so distressingly common in medical works. Only one failure in clearness was found: in discussing a case in which two electrodes are used the author states that they "must be applied at an equal distance from each other". He surely must mean parallel.

This is a good book; it should be studied by all interested in electrical medicine, and especially by all practitioners who are not yet interested in it.

HISTORICAL ESSAYS.

JAMES KEMBLE, whose book "Idols and Invalids" was reviewed in these pages, has produced another volume of essays under the title of "Hero-Dust".⁴ He has investigated from the medical point of view illustrious persons in history, men and women who in their lives and deaths are of "wide and perennial interest". He deals in turn with Mary Queen of Scots, Epicurus, Catherine the Great of Russia, John Milton and his blindness, Beau Brummell and Omar Khayyâm.

The two most important of the essays are those dealing with John Milton and with unhappy Mary Queen of Scots. There are those who would accept the facts of history without prying into causes and into motives actuating the notable personages appearing in its pages. They hold, in short, that it is an impertinence to probe the private lives of these people. Criticism of this kind was levelled at the author's first book. Medical practitioners, however, generally look for causes; and they know that habits, health and disease have an enormous influence on the lives of men, on the welfare of communities and on the fate of nations. Mary's marriage to Darnley was a "catastrophic indiscretion". Darnley failed both as a husband and a consort; he was murdered. Bothwell was regarded as being responsible for Darnley's death; and Mary, with what appeared to be incontinent haste, married him. She was with child and subsequently miscarried. The author's argument centres round this pregnancy, and he shows how its duration affected the chain of events. Equally interesting is his account of Milton and his glaucomatous blindness. He discusses the stages of Milton's life in relation to his blindness and his writing. He asks whether Milton would have written "Paradise Lost" if he had not become blind. Perhaps not. The book is interesting and may be recommended.

¹ "A Short Practice of Surgery", by H. Bailey, F.R.C.S., and R. J. McN. Love, M.S., F.R.C.S.; Third Edition; 1936. London: H. K. Lewis and Company Limited. Demy 8vo, pp. 1004, with 763 illustrations, of which 55 are coloured. Price: 28s. net.

² "The Hygiene of the Change in Women (the Climacteric)", by I. E. Hutton, M.D.; 1936. London: William Heinemann (Medical Books) Limited. Crown 8vo, pp. 119. Price: 5s. net.

³ "The Practice of Ionization", by J. N. Dyson, M.R.C.S., L.R.C.P., with a foreword by E. P. Cumberbatch, M.A., B.M., D.R.M.E., F.R.C.F.; 1936. London: Henry Kimpton. Crown 8vo, pp. 193, with illustrations. Price: 6s. net.

⁴ "Hero-Dust", by J. Kemble, Ch.M., F.R.C.S.; 1936. London: Methuen and Company Limited. Crown 8vo, pp. 209. Price: 6s. net.

The Medical Journal of Australia

SATURDAY, JANUARY 30, 1937.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

THE COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH.

In 1926 the Commonwealth Government formed the Council for Scientific and Industrial Research. Six years previously the Government had established the Institute of Science and Industry, and the powers and functions of the new body were defined by the *Science and Industry Research Act, 1926*. In the popular imagination governments are composed of men, hard-headed and calculating, who care more for the security of their seats and for "office", if it is within their reach, than for the happiness of their constituents and the welfare of the community. They are generally good talkers (we have suffered their multiloquence in silence at medical dinners) and are supposed to be past masters at throwing dust in the eyes of the people. But the popular notion is by no means always correct, and the Federal Government in 1926 showed itself to be far-seeing, wise and discerning. Among the powers and functions with which it endowed the new council were the following: (a) The initiation

and carrying out of scientific researches in connexion with primary or secondary industry in the Commonwealth; (b) the training of research workers and the establishing of industrial research studentships and fellowships; (c) the making of grants in aid of pure scientific research; (d) the establishment of industrial research associations in any industries; (e) the testing and standardization of scientific apparatus and instruments; (f) the establishment of a bureau of information; (g) the function of acting as a means of liaison between the Commonwealth and other countries in matters of scientific research. The council consists of (a) three members nominated by the Commonwealth Government; (b) the chairman of each State committee constituted under the Act; (c) such other members as the council, with the consent of the Minister, coopts by reason of their scientific knowledge. The three Commonwealth nominees at present are Sir George Julius, B.Sc., B.E. (Chairman), Sir David Rivett, M.A., D.Sc. (Deputy Chairman and Chief Executive Officer), and Professor A. E. V. Richardson, M.A., D.Sc. Together these three members form the Executive Committee, which exercises all the functions of the full Council in the intervals between its meetings.

The "C.S.I.R.", as it is generally known, has completed ten years of its existence; and its tenth birthday has been marked by the publication of a brochure setting out its achievements and couched in attractive language that may be understood by the average citizen. The Honourable A. J. McLachlan, Minister-in-Charge of Scientific and Industrial Research, in the foreword expresses the opinion that probably few people appreciate the full scope of the Council's activities. This brochure should be read by all medical practitioners and, indeed, by all thinking members of the community. At the present time, when the National Health and Medical Research Council is coming into being, as many people as possible should be made to realize that research is essential to the success of almost all human endeavour, and that to make no concerted effort to

discover the cause of disease and to seek its prevention is suicidal. In the circumstances it will be useful to draw attention to some of the achievements of the council and to some of its problems that remain unsolved.

The research work of the council is organized under divisions and each division is placed under the control of a recognized authority in the sciences concerned. The five divisions are devoted to plant industry, economic entomology, animal health and nutrition, soil research and forest products. In addition a Section of Food Preservation and Transport has been established. What will appeal to the average citizen is that every one of the activities of the council is designed to assist either immediately or eventually some aspect of the nation's production and industry. Many of the results can be at once translated into action. In some instances fundamental knowledge is lacking. Thus the Divisions of Soil Research and of Animal Health and Nutrition are engaged in the accumulation of fundamental information required as a basis for future research. The most brilliant example of research that yielded immediate practical results was the work undertaken by the Commonwealth Prickly Pear Board that resulted in the elimination of the prickly pear pest by the moth *Cactoblastis cactorum*. By means of this moth millions of acres of land, previously useless, have been opened up for agriculture and grazing. That patient research does not at once reap its reward is shown by the failure of the attacks on St. John's wort, *Hypericum perforatum*. The details of the work so far carried out on this weed are full of interest and justify the hope that present efforts will eventually be successful. Much could be written of the work on animal health and nutrition, on the successful work on black disease of sheep in which a vaccine capable of protecting animals has been prepared, on the important investigations into pleuro-pneumonia of cattle crowned by the isolation of the organism and the preparation of an immunizing vaccine, on the work on tick-borne diseases and so on. Although we are warned not to be too hopeful of the outcome, we cannot fail to

be interested in the possibility that a contagious disease capable of exterminating rabbits may be found. Blowflies and sheep also present a problem of critical importance to Australia. There is much more in this brochure to hold the interest of readers and to make them appreciative of this national organization. Most gratifying is the fact that the work of the "C.S.I.R." is not carried on in an isolated fashion. It enjoys the cooperation of State departments and universities; some of its personnel work in State laboratories and others in universities under the supervision of university officers. We have stated that the work of the council should be widely known; and we would suggest that there is more than enough material in the present brochure to serve as the basis of an interesting cinematograph film that could be used to enlighten the public.

Current Comment.

A FURTHER CAUSE OF OPTIC ATROPHY.

IN the course of routine clinical work the physician is sometimes asked by the oculist to assist in the search for a cause of primary optic atrophy. The well-known causes of optic nerve degeneration, such as metallic poisoning, syphilis, pressure effects and retrobulbar neuritis, are, as a rule, readily excluded. Whether "focal sepsis" can produce such a result at a distance is highly debatable. Quite a few patients remain affected by a progressive whitening of the disk and concurrent visual loss, the aetiology of which seems most obscure.

Professor Henry Cohen,¹ in a recent short communication to the Association of British Neurologists, provides full clinical notes descriptive of two patients with optic atrophy; the cause was at first undetermined, but the condition was gradually followed by the appearances of the complete syndrome of Addisonian anaemia. As Professor Cohen points out, disturbances of vision accompanying pernicious anaemia have long been recognized, but the finding that optic atrophy may manifest itself as the presenting symptom in pernicious anaemia, and before the typical blood changes appear, is an entirely novel observation. Such a situation, however, differs little from the primary cord degeneration known as subacute combined degeneration, which may also precede the alteration in the blood picture. Widespread changes are

¹ *The Lancet*, November 21, 1936.

also to be recognized in other peripheral nerves in this disease—a still closer analogy to optic atrophy.

In the two patients described as illustrations of this sequence, the visual loss of one had begun eighteen months before the anaemia was recognized; in the other patient, vision had been blurred for eight months before the neural atrophy was discovered. There were no confirmatory signs of primary anaemia or combined degeneration, although complete achlorhydria was established. In view of the experience of the previous patient, and in the face of such a serious situation, treatment by daily injections of liver extracts was begun forthwith. In both patients the degeneration was arrested, and a fairly satisfactory state of vision was retained, indicating that the loss of function is most fortunately a slow one. It is apparently the result of a neurotoxin or of some substance necessary for the health of nerve tissue. The more permanent and refractory types of nerve damage in pernicious anaemia have been shown of late to depend to some extent upon actual vascular damage consisting of small hæmorrhages and thromboses in the neighbourhood of the affected neurones. That the neurones of the retina concerned in optic atrophy are not so destroyed, is apparent from the hæmorrhagic state of the retina on ophthalmoscopic inspection, and from the favourable results of specific therapy.

Regarding this finding in retrospect, and before giving it a permanent place in the symptomatology of primary anaemia, we must conclude that even in the days before the introduction of liver therapy, optic atrophy was not a frequent finding. Peripheral neuritis appeared usually due to arsenic administration, but complete blindness was a rarity even in the ultimately fatal cases. It is not likely, therefore, that more than a moiety of patients with optic atrophy, of obscure origin, will save their sight by adequate liver intake unless, indeed, the optic nerves exclusively degenerate as an isolated phenomenon in deficiency diseases. It would be interesting to discover whether "Marmite" or yeast, containing the antineuritic vitamin, would be as successful as liver therapy was in Professor Cohen's interesting series.

THE DIAGNOSIS OF AMOEBIC DYSENTERY.

A SENTENCE from a brief but useful article by George W. McCoy and Albert V. Hardy on the clinical diagnosis of amoebic dysentery is so striking that it is worth quotation:¹ "If treated symptomatically the illness tends to be protracted and to become progressively more distressing; if inaccurately diagnosed, therapeutic procedures hazardous to life are likely to be instituted." Does the latter half of this sentence represent the opinion

which the authors (who are members of the United States Public Health Service) hold of those physicians who with ever-fresh optimism attempt to cure chronic colitis by irrigation with more or less irritating chemical antiseptics, or of those surgeons who with still greater zeal duplicate the arrangements of Nature with their artificial stoma, through which still more irrigation may be carried out? It may be, but perhaps some cynicism may be permitted us, for it cannot be said that the universality of amoebic dysentery as a sporadic or epidemic form of diarrhoeal disease is yet recognized on all hands.

These authors, during their investigation of the now well-known Chicago epidemic, found that of the active cases brought to their notice only 20% were recognized prior to the general recognition of the presence of an epidemic. That is to say, a doctor's chance of recognizing amoebic dysentery was four times greater once he was aware that cases were being seen by others, or, putting it still more plainly, once he thought of it as a diagnostic possibility. McCoy and Hardy base their report on 1,215 cases and point out that this disease is not limited in distribution by latitude, season or social standing. Another useful point to remember is that if persons have been exposed to the risk of faecal pollution of water supply, and especially if other enteric infections have been observed, the possible incidence of amoebic infection should be always considered. Further, the onset may be abrupt; in 18% of these cases it was so, and in one-third of this group the symptoms did not include diarrhoea or abdominal pain. Fever and vomiting alone may occur, and appendicitis may be simulated, a most important thing to realize, since operation in these cases carries a high mortality. The chronic and relapsing types may not be seen in these sharper epidemics. One naturally wishes to know how many of the 1,215 cases were correctly diagnosed in the first place. Inadequate or erroneous diagnoses were made in 214 cases; the commonest error was one of omission, the physician being content with the non-committal label of "colitis" or "dysentery". The mortality was nil when early diagnosis was correctly made, but no less than 98 deaths occurred in this Chicago outbreak, most of these in persons whose illness had dragged on for months. The authors give the honest warning that too much reliance must not be placed upon the failure of the pathologist to demonstrate the amoeba. Even experienced workers may not always find them, even though the material examined is suitable. There is an additional difficulty, so pertinent in this country, that of the delays and obstacles in the way of an adequate pathological examination. In these cases there remains the therapeutic test, which can always be applied, and the employment of which may often be of material aid in the identification of the disease. McCoy and Hardy give this method of therapeutic trial their blessing, and the whole subject may be commended to the practitioners of this country for earnest consideration.

¹ *The Journal of the American Medical Association*, October 24, 1936.

Abstracts from Current Medical Literature.

DERMATOLOGY.

Water Metabolism and Experimental Skin Infections.

G. V. KULCHAR AND H. E. ALDERSON (*The British Journal of Dermatology and Syphilis*, October, 1936) discuss the relationship of water metabolism to experimental infections of the skin. They have carried out experiments on rabbits and have infected them with a hemolytic strain of *Staphylococcus aureus*. A control series of animals was freely supplied with water; the animals subjected to experiment were deprived of water forty-eight hours prior to inoculation. The authors find that cachexia induced by dehydration is not followed by an increased susceptibility to experimentally induced skin infections. If anything, the effect of the dehydration was to increase the resistance of the skin to infection. After the infection was well established, its normal course to involution was hastened by dehydration. "With dehydration some change apparently occurs in the skin, either increasing its resistance to infection or rendering the terrain unsatisfactory for bacterial growth." A flare-up of the experimental skin infection was noted following restoration of the water balance to normal; and the organism was recovered in an attenuated form from lesions in the dehydrated animals. This is taken as suggesting that the effect of dehydration is to render the skin unsuitable for bacterial growth and existence. In answer to the possible criticism that other factors apart from water balance, such as diet and vitamins, may be concerned in the resistance of the skin to infection, the authors point out that all the animals received the same diet, although the animals receiving no water in many instances ate less than the controls. The authors discuss at some length the findings of others. They conclude with the following statement: "It is suggested, but by no means established, that the cutaneous water retention accompanying increases in the glucose content of the skin may explain the susceptibility to infections of the skin observed clinically in patients with derangements of the carbohydrate metabolism."

Intravenous Injections of Charcoal in the Treatment of Skin Diseases.

E. DAVIS (*The British Journal of Dermatology and Syphilis*, October, 1936) states that activated charcoal is known to adsorb certain drugs, toxins and poisons. It has been given intravenously in acute infections and skin diseases and good results have been claimed from its use. The author has

carried out an investigation into the effects of intravenous charcoal injections. The average size of the particles used was one to four μ . The charcoal was made up in fresh 2% sterile suspensions in distilled water, saline solution or gum-saline solution. In all, 800 injections were given to 330 patients. When injected in doses of from 4.0 to 5.0 cubic centimetres into afebrile subjects, charcoal causes a rise in temperature, pulse rate and respiration rate; subjective reactions of varying degree may also occur. In six of 330 persons immediate collapse or a "shock-like" reaction was produced; recovery began within five minutes and was complete in twelve hours. In order to test the charcoal the author selected only those patients whose skin conditions had been resistant to other forms of therapy or who were obviously doing badly on the usual treatment. Fifty patients came within this category. The author divided the patients after treatment into four groups: (a) those in whom no improvement whatever occurred or, if improvement did occur, the charcoal was not an important factor; (b) those who at first gave encouraging results, but improvement was not maintained, the improvement might have occurred without the charcoal; (c) those whose lesions improved quickly, but in whom relapses occurred, nearly all the relapses yielding to further injections of charcoal; (d) those in whom quick and lasting improvement occurred without relapses or after no more than two relapses. The conditions from which the patients were suffering included acute and chronic eczema, seborrhoeic dermatitis, *syphilis barba*, trade dermatitis and other similar complaints. In recording his results, the author describes those in Group (a) as receiving "no benefit"; in those in Groups (b) and (c) the charcoal was "possibly of benefit"; in Group (d) it was "probably of benefit". Of the 50 cases the charcoal was "probably of benefit" in 19 (38%), "possibly of benefit" in 19 (38%), and "of no benefit" in 12 (24%). The author concludes that charcoal is worthy of further trial in the treatment of skin disease.

"Mapharsen" in the Treatment of Syphilis.

O. M. GRUBER, R. S. DIXON *et alii* (*Archives of Dermatology and Syphilology*, September, 1936) report the results of the use of "Mapharsen" in mass treatment of syphilis in a clinic for venereal diseases. During a period of two and a half years they have given a total of 75,589 doses to 4,841 men and women. "Mapharsen" is a chemically pure, uniform substance with an arsenic content of 29.02%. It is the precursor substance in the synthesis of arsphenamine, and it is the main product of the breakdown of an arsphenamine to which is attributed the spirocheticidal activity. "Mapharsen" needs no activation in the test

tube or body; in this respect it differs from the arsphenamines. The average initial dose for adult patients of both sexes was 0.04 gramme; the subsequent maintenance dose for women was 0.04 gramme and for men 0.06 gramme. Treatment consisted of weekly injections of "Mapharsen" for eight weeks, followed by eight weeks of treatment with heavy metal. The courses alternated for one year or over without a rest period until three courses of "Mapharsen" and three courses of heavy metal were completed. The "Mapharsen" given in a course contained only about one-tenth as much arsenic as a similar course of arsphenamine. Among the 4,841 patients no severe complications and no death occurred; nor was there any instance of hæmorrhagic encephalitis, hæmolytic anaemia, jaundice, severe exfoliative dermatitis or severe nitritoid crisis. Moderately severe reactions, necessitating discontinuance of treatment, occurred 4.4 times per thousand injections. Most of these reactions were associated with gastrointestinal disturbance. Spirochetes disappeared from moist lesions within twenty-four to forty-eight hours after an initial dose of 0.04 gramme. No patient with early syphilis was encountered whose condition did not respond to "Mapharsen" medication. The authors give details of the serological reactions, and conclude that "Mapharsen" is a safe and potent drug for the treatment of syphilis.

The Use of Colloidal Manganese in Psoriasis.

J. SPITZ (*The Urologic and Cutaneous Review*, September, 1936) reports on the use of colloidal manganese in psoriasis. In thirty cases in which he used the drug (given intramuscularly) with ultra-violet therapy, ointments *et cetera*, eleven cleared up and the patients thirteen months later had had no recurrence. The condition of twelve of the patients was greatly improved. In twenty cases no treatment other than the manganese was used; in five patients the condition cleared up and two manifested considerable improvement. Ultra-violet therapy was combined with manganese in thirty cases without any other therapy being used; in eleven the condition cleared up, eight patients manifested considerable improvement and the remainder received no benefit. Given orally, colloidal manganese was useless.

UROLOGY.

Surgical Management of Ureteric Calculi.

J. MINDER (*Urologia*, March, 1936) discusses the operative treatment of ureteric calculi, especially with reference to the problem of how to deal

with the corresponding kidney. Open operation for ureteric calculus, that is, ureterotomy, as a rule should be advised only when passage of the calculus is considered to be impossible or very unlikely, or when the migration of a calculus is so unduly protracted as to menace seriously the affected kidney. Urgent ureterotomy is called for only when complete sudden blockage, accompanied by infective phenomena, occurs and lasts more than twenty-four hours. In all non-urgent cases ureterotomy should not be unduly delayed in case the kidney is irreparably damaged. In other words, conservative treatment through the cystoscope is given a fair trial, but no more. Thus if a surgeon is forced to do an open operation, it should be ideally a simple ureterotomy, without his being forced to the necessity of performing a renal exploration as well. Urological diagnostic measures, including excretion urography and functional tests, give some idea of the state of the corresponding kidney, but allowance must be made for the capacity of recovery in this organ after removal of the stone by ureterotomy. In many cases, therefore, there is little doubt that simple ureterotomy will achieve a good result. When a grave renal infection exists, however, or when there is serious doubt as to the possibility of the kidney's resuming a reasonable function, renal exploration is necessary as well as the ureterotomy; in the former case nephrotomy is usually needed, and in the latter nephrectomy. In the most advanced cases nephro-ureterectomy is called for.

Treatment of the Ureteric Stump after Nephrectomy.

G. RONFINI (*Urologia*, June, 1936) has conducted experiments in rabbits as well as clinical researches in patients after nephrectomy, in order to study the state of the remaining portion of ureter. Sometimes the canal becomes obliterated, but often it does not, and in some cases this leads to or perpetuates vesical and other troubles. Researches by Taddei seemed to indicate that atrophy of the canal proceeded more slowly in those cases in which the ureteric stump was ligatured than in those in which it was dropped back unligatured into the wound. Later on, Lorin asserted that most ureters were still permeable one year after nephrectomy, but usually became transformed into fibrous cord during the third year. Kidd and Fronstein confirmed permeability even four years after nephrectomy and observed cystoscopically that the ureter still contracted more or less rhythmically. Perlmann and Sauer have seen ureteric calculi ejected with colic, from a ureter, four years after nephrectomy; the stones have been left behind in the ureter. The most important renal malady in regard to after-disease in the ureter is, however, tuberculosis. The most radical preventive treatment, if later

trouble may reasonably be feared, is complete nephro-ureterectomy. Some surgeons remove also a portion of bladder wall surrounding the ureteric meatus. When a ligatured ureteric stump of variable length is left behind, however, various surgeons have tried the method of leaving some antiseptic in the lumen. Marcucci recently conducted experiments in rabbits, filling the ureter with a 2% iodized solution of alcohol; he found, by sacrificing the animals at various periods of time afterwards, that transformation of the ureter into a fibrous cord occurred at about eighty days. The author performed similar experiments, using, however, an aqueous iodide-iodine solution of 2% concentration; moreover the author did not follow Marcucci's technique of ligaturing the lower end of the ureter, since this necessitates a second incision and a prolonged operation. The amount of solution used in rabbits was only 0.5 cubic centimetre. With this simpler and more practical method obliteration was secured in ninety days as a rule, almost as short a period as in Marcucci's experiments.

Primary Malignant Tumours of the Ureter.

M. SCHILLINGS AND F. A. SONDERVORST (*Revue Belge des Sciences Médicales*, April, 1936) consider that complete nephro-ureterectomy, including also a collarette of vesical wall in the case of tumours low down, is the only method giving any real hope of cure. When the patient's condition allows, the operation should be done in one stage. If the surgeon is forced to intervene in two stages, it is better for him to do the ureterectomy first and the nephrectomy later. Partial nephro-ureterectomy or segmental ureterectomy may sometimes be followed by definite cures. Electro-coagulation is not to be thought of as a method of treatment. Radiotherapy or radium therapy is indicated only in inoperable cases; only a certain amount of relief from pain is to be expected, and then only in some cases.

Pyeloplasty.

J. K. ORMOND (*Journal of Urology*, November, 1936) gives an account of six unsuccessful operations for non-calculous hydronephrosis, representing one-third of his cases. The study of these cases and those recorded in the literature led him to the following conclusions: (i) He distrusts the Heinecke-Mikulicz type of operation, believing it to be suitable only for early uninfected cases, for which reimplantation of the ureter has frequently given excellent results. (ii) Uretero-pyeloplasty has no advantage over reimplantation of the ureter. It is difficult to perform with precision, owing to the displacement of the kidney for the exposure; the line of incision and repair may be distorted when the organs are replaced in their normal positions. (iii) For uretero-

pelvic junction obstructions resection of the junction is favoured. The ureter, cut obliquely, is reimplanted in the most dependent position. (iv) For reimplantation his technique includes accurate apposition of the cut edges without any protrusion of the ureter into the pelvis. A splinting ureteric catheter is always used and remains in position for about three weeks. (v) In the presence of acute or marked infection preliminary nephrostomy is to be performed. (vi) Nephropexy is performed in every case in which the kidney is not bound down by adhesions. (vii) Plastic operations are to be reserved for those in whom conservation of the renal function is imperative, or for those in whom the desirability of conservation of the renal function outweighs the chance of increased expense, danger and loss of time due to an unsuccessful operation.

"Auto-Prostatectomy" due to Tuberculosis.

UNDER the name "auto-prostatectomy", T. N. Hepburn (*New England Journal of Medicine*, October 8, 1936) describes the case of a man who, eight years previously, had nephro-ureterectomy performed for tuberculosis. At the age of twenty-six years he developed dribbling after micturition. Investigation showed that the bladder and both sphincters were intact, but the prostatic portion of the urethra was represented by a diverticulum of a size commensurate with the normal prostate. The floor of this cavity was perforated by numerous dilated prostatic ducts varying from one to five millimetres in diameter. The *verumontanum* and ejaculatory ducts appeared perfectly normal. Rectal examination did not suggest tuberculosis of the seminal vesicles, and there was no evidence of epididymitis. A cysto-urethrogram demonstrated the radiographic appearance of the condition.

Prostatic Resection.

M. STERN (*Urologic and Cutaneous Review*, November, 1936), who introduced the resectoscope ten years ago, reviews its present status. He deprecates the published statements of those who advocate resection for all forms of prostatism, and of those who deny the necessity for preliminary preparation. In his view "resection is undoubtedly indicated in the bulk of all prostatic cases, but it must be conceded that it has been found inadequate in some cases and too radical in others". Enucleation is reserved for cases of "advanced prostatism", the chief indications being an extensive tumour or one of the forms of gross sepsis. Carcinoma, bars and contractures of the bladder neck and the majority of adenomatous cases are suitable for resection. For the early cases with a little tumour formation the author advises his prostatic resorption technique.

British Medical Association News.

SCIENTIFIC.

A MEETING of the Section of Medicine of the New South Wales Branch of the British Medical Association was held on October 15, 1936, in the Robert H. Todd Assembly Hall, British Medical Association House, 135, Macquarie Street, Sydney, Dr. O. A. A. DIETHELM, the Chairman, in the chair. The meeting took the form of a series of clinical demonstrations.

Narcolepsy.

DR. ALLAN WALKER showed a patient, a young man aged nineteen years, a dairy farmer, who had been quite well until thirteen months previously, when he sustained a blow on the left side of the face while playing football. He was unconscious for a short time after the accident and was in hospital nine days, when a depressed malar bone was elevated. A week later he had giddy attacks and some blurring of vision in the left eye. He then began to notice that he fell asleep readily; he also had attacks of weakness in the legs and collapsed on the ground, conscious, but unable to move. His speech had always been rather rapid, but had become somewhat blurred; there was also some drooping of the eyelids. He had an abnormally large appetite for some time after the accident and put on weight.

In November, 1935, the patient was investigated in the Royal Prince Alfred Hospital. No abnormality was found in the nervous system, including the fields of vision. The X ray picture of the skull was normal, both as regards cranial bones and *sella turcica*, and both blood and cerebro-spinal fluid failed to react to the Wassermann test. No abnormality was noted in the cerebro-spinal fluid in regard to cells or protein content.

On September 18, 1936, on readmission to hospital, the patient gave a history of attacks of uncontrollable sleepiness, also of loss of all voluntary muscular power when he was excited; thus he would fall down as the result of surprise or other emotional stimulation. He complained also of weakness of the left eye and occasional double vision, and had occasional difficulty in micturition.

At the time of the meeting the patient had rather a mask-like face and rapid and precipitant speech; there was no tremor or incoordination, and the reflexes were normal. The glucose tolerance test gave practically no rise in the blood sugar.

Examination by the Bjerrum screen revealed no abnormality of the fields of vision, and the fundi were not abnormal; there was a slight pallor of the outer half of the optic disk, but this was within normal limits. Administration of phenobarbitone did not alter the liability to fall asleep, which varied from day to day. Ephedrine had also been tried, and at the time of the meeting the patient was taking by mouth 0.065 gramme (one grain) in the morning and 0.097 gramme (one and a half grains) in the evening. It was of interest that he did not complain of any difficulty in micturition now, in spite of this considerable dose.

This boy's condition was apparently one of narcolepsy arising after a cerebral concussion. The question of the propriety of performing encephalography had been considered while he was in hospital before, but nothing was then done; now it was being reconsidered. It seemed possible that some gliosis in the hypothalamic region was the lesion underlying the symptom complex.

PROFESSOR W. S. DAWSON, commenting on this case, said that narcolepsy was comparatively rare and that he was therefore grateful for the opportunity of seeing this case. In this condition there was a paroxysmal urge towards sleep which might or might not be accompanied by loss of tone, termed a cataplectic seizure. It also appeared that these patients might have a condition of suspended consciousness amounting to reverie or plain immobility with the retention of full consciousness. The pathology was

still debatable. The occurrence of these symptoms with certain tumours would evidently point to the presence of lesions round the basal ganglia or hypothalamus. Encephalitis and trauma were both associated with multiple and diffuse lesions, and hence made localization difficult.

Professor Dawson spoke of the relation of narcolepsy to true sleep. He wondered whether Dr. Walker had been able to elicit an extensor response during an attack in his patient. There was little doubt that trauma was the aetiological factor. One might raise the question how far there was a latent virus of encephalitis and how far trauma activated it. Professor Dawson was doubtful as to the value of encephalography in this case, because the lesion was apparently very much localized.

Another symptom presented in this case was drooping of the eyelids. Perhaps this was due to paralysis of the centre in the hypothalamus, which controlled the protrusion of the eyeball.

Meningioma.

DR. E. H. STOKES showed a male patient, aged forty-five years, by occupation a shoemaker, who was an inmate of the Sydney Hospital under the care of Dr. George Bell, by whose courtesy he was demonstrated.

A mass on the vertex had been present for at least twenty years. As far as could be ascertained it was not increasing in size. During the previous nine months, however, the patient had suffered from vertical headache, which was not severe in the morning, and which was relieved by powders containing aceto-salicylic acid, phenacetin and caffeine citrate. About eight weeks before the meeting he had suffered from three attacks of vomiting. His eyesight had deteriorated during the past two months, but, according to his statement, was still quite good. He had worn glasses during the previous seven months.

On examination the mass on the vertex was quite evident. It was about two inches wide and about three inches long, and occupied the posterior portion of the parietal region in the mid-line. The examination of the *fundi oculorum* on August 24, 1936, was made by Dr. A. Tange Dunlop, who reported: "Optic neuritis in both eyes, more marked on the left side."

On October 2, 1936, Dr. Dunlop examined the fundi again and reported that "the changes were more marked and optic atrophy was commencing on the right side". The fields of vision were normal, but the blind spots were slightly enlarged. An X ray picture of the skull was reported upon by Dr. H. M. Cutler as showing changes typical of meningioma, spicules being present in the outer table of the skull and the so-called rising sun appearance being evident. The blood serum failed to react to the Wassermann or the Kahn test.

Apart from symptoms (headaches, vomiting and falling eyesight) and signs (fundal changes) due to generalized intracranial pressure, no other abnormalities were detected.

With regard to the diagnosis, the patient appeared to present a typical example of a meningioma. Discussion of the correct method of treatment was interesting. The removal of the meningioma did not appear to be possible on account of the involvement of the superior sagittal sinus. Moreover, interference with the venous return from the Rolandic area would almost certainly result in paraplegia. As the tumour was slow in growth, it would appear that the best course to pursue would be to endeavour to save the patient's eyesight by means of subtemporal decompression.

In conclusion, Dr. Stokes stated that Dr. Bell was very anxious to learn the views of the members of the Section of Medicine with regard to treatment.

Posterior Cerebral Artery Thrombosis.

DR. RICHMOND JEREMY showed a male patient, aged sixty-three years, a canvasser, who had been treated in hospital in March, 1936, for hypertensive heart disease. One month before the meeting he was sitting, quietly reading, when he felt as if he had been touched on the right wrist, and his arm seemed to "shriveled up his sleeve". He noticed

immediately that the vision on the right side was impaired; this defect of vision persisted. The patient noticed flashes of light on the blind side, and objects such as trees, boxes and "flights of birds" were perceived. The right hand now felt quite normal, but some sensation of giddiness was present.

On examination a right homonymous hemianopia was found; it was not complete, the fixation point being spared, and it was congruous and superimposable. There was a fine lateral nystagmus to the left and right; there was neither word blindness nor impairment of cortical sensibility in the limbs of the opposite side. Hypertension and auricular fibrillation with an enlarged heart were present. The blood gave no reaction to the Wassermann test; lumbar puncture had not been performed.

Dr. Jeremy said that the sudden onset of the symptoms and the presence of vascular disease with auricular fibrillation suggested that the symptoms and findings were due to thrombosis or embolism of a cerebral artery. The hemianopia, the visual hallucinations, and the absence of other neurological findings suggested an occlusion of the calcarine branch of the left posterior cerebral artery causing softening of the optic radiations in the occipital lobe. The incomplete hemianopia would apparently be due to preservation of brain tissue in the area of supply of the middle cerebral artery.

Dr. J. P. TANSEY thanked Dr. Jeremy for his demonstration, which he had appreciated not only because of the interest of the case itself, but because it had been stressed that most cerebral lesions were of vascular origin. In Dr. Jeremy's case the lesion in the post-cerebral vessel and the resulting hemianopia made it hardly likely that the condition could be overlooked. But it should be remembered that, while some cerebral vascular accidents occurred when a cortical lesion made the condition easily recognizable, a vessel might be involved in other parts of the brain, when there was no hemianopia *et cetera*, so that the significance of the condition might be easily overlooked. In the postero-inferior branch of the cerebellar artery this condition was not looked for. Disability might be so slight that unless it was looked for it could easily be missed. On the other hand, there might be such persistent vomiting and nystagmus that the lesion might be easily recognizable as the original cause.

Post-Encephalitic Parkinsonism.

Dr. W. E. FISHER, for Dr. G. C. WILCOCKS, showed a male patient, aged thirty-three years, married, and at the time of the meeting working as a labourer. His family history contained no point of significance. He enlisted when very young, and in 1918 had his first illness; he was in hospital for a period of six weeks, and his condition was diagnosed as pyrexia of unknown origin. His further history was uneventful until August, 1929, when his eyes were burnt at work by hot oil and, he also alleges, he sustained injury to his eyes by a flash of welding light. He was treated in hospital and allowed to return to work two weeks later. During his first week back at work, while walking home from the railway station, he experienced a seizure in which his eyes turned upwards until he found himself gazing fixedly and uncontrollably at the heavens—in short, he was experiencing his first oculogyral crisis. He continued to have such attacks, which usually lasted about half an hour, up to the time of the meeting. Twelve months after the first crisis he began to notice tremor and stiffness affecting the left arm and leg; this had since extended to involve all four limbs, but as yet occasioned no great disability. The patient was working and in his spare time played a drum in a local band.

On examination there was seen to be an obvious Parkinsonian tremor, worse when the patient was under emotional stress; he had characteristic cog-wheel rigidity, though this was not pronounced; there was a suggestion of mask-like expression and of festination in the gait; his speech was slurred and there were pupillary changes. The blood gave no reaction to the Wassermann and Kahn tests.

Dr. Fisher said that the diagnosis in this case was obvious at a glance. When first seen, the patient gave the

history of his stay in hospital with the diagnosis of pyrexia of unknown origin without comment. Subsequently, having heard Dr. Fisher discuss this with students and so having had the opportunity of realizing that the medical mind regarded it as a point in favour of an infective origin for his condition, the patient modified his story and now said that during his stay in hospital there had been really nothing the matter with him, that he had been just "swinging the lead". Dr. Fisher took leave to doubt this addition. The patient was presented as being of interest from two points of view. First, oculogyral crises appeared to have been his first post-encephalitic symptom by a considerable margin, which, in Dr. Fisher's experience, was unusual. Secondly, the crises appeared to have followed, by a very short interval, a definite ocular injury. This raised the question as to whether trauma might really be of significance as a factor in the inception and localization of symptoms in a condition such as post-encephalitic Parkinsonism, which was not traumatic in origin. Collier stated that trauma not infrequently determined the limb in which tremor first made its appearance, and that the relation between cephalic trauma and the first appearance of the symptoms of cerebral tumour was one which occurred much too often to be ignored. A similar coincidence of trauma with the site of initial symptoms was to be observed in progressive muscular atrophy. This was a point worthy of consideration by those interested in workers' compensation, especially in view of the "all or none" interpretation which this jurisdiction had attached to its Act. Hitherto, so far as Dr. Fisher knew, the dignity of the neurological disorders had preserved them from the courts; in tremor or wasting it was easy to say that a nearby minor injury was merely coincidental in time and would not otherwise have been remembered, and it was difficult to dispute this in the face of a well-recognized pathology. But it was not so easy to suggest that a patient invented an oculogyral crisis, and once the factor of aggravation was admitted it opened the door to a number of claimants suffering from other neurological conditions as well as the Parkinsonian syndrome; and they had perhaps as much justification as the many patients with hernias of congenital origin who made successful claims.

Dr. G. C. WILCOCKS, in discussing this case, said that Dr. Fisher had suggested that the relationship of the Parkinsonian syndrome to external factors such as trauma and the emotions should be dealt with. Most text-books stated that the Parkinsonian syndrome might be due to fear and other such emotional causes, or to injury. Dr. Willcocks did not know of any instance of such a case in which this statement was made and the facts were put forward, except in the case described by Gowers. Gowers had given a specific case and most text-books since had copied his case. Gower stated that the emotions of fear and anxiety could give rise to Parkinson's syndrome, and the same statement was made in many other text-books.

It was difficult to discuss this condition from a personal viewpoint, but in ex-soldiers there had been found not more than twelve cases of Parkinson's disease. If fear was the cause, surely there would be more than twelve cases; and most of these twelve could be related to encephalitis. This was one argument against the fear hypothesis. Another was the pathology. The condition was either degenerative or infective, and there was certainly degeneration of the nerve cells. Dr. Willcocks did not know of fear and anxiety causing this.

Referring to trauma as a cause, Dr. Willcocks asked whether any cases were known in which injury to the limbs caused degeneration centrally. He knew of only one case of injury, incurred in an aeroplane accident, in which signs of Parkinsonism appeared soon after the patient gained consciousness. But this man smashed the base of his skull, and in these circumstances the condition was understandable. Dr. Willcocks could imagine also that hemorrhage into the basal ganglia might occur with injury and might give rise to Parkinsonism. But how many of the members present had seen Parkinsonism arising from fracture of the skull? Dr. Willcocks himself had never seen a case following fracture, except the one that he had mentioned.

Chronic Arsenical Poisoning.

DR. A. W. HOLMES & COURT reported three cases of chronic arsenical poisoning, two of the patients being exhibited at the meeting.

The first patient was a male, aged fifty-six years, who exhibited keratosis of palms and soles, of some years' duration. There was no clear history of exposure to arsenic, but the metal was recovered both from his nails and his hair on several occasions. He exhibited no neurological signs.

The second patient, a farm labourer, aged fifty-three years, had come in contact with arsenic in combating grasshoppers. He was admitted to hospital on July 20, 1936, giving the history that on November 11, 1935, he had had hot feelings in his legs and feet, and one week later entered Crookwell Hospital with "cold and bronchitis". While in hospital he noticed his legs becoming weaker and then very painful, with a burning sensation that kept him awake at night. The condition later involved the feet, then the arms and hands, and wrist-drop appeared towards the end of December, 1935. During the next few months wasting of the legs and hands became apparent. In May, 1936, the patient had a single hæmoptysis. He took very little alcohol and smoked about two ounces of tobacco a week. In the previous four years he had had several attacks of bronchitis.

On his admission to hospital on July 20, 1936, sensation was found to be normal, with no hyperæsthesia. There was motor weakness of the muscles of both forearms, both thighs and both legs, accentuated in each case by the presence of fibrous contracture deformities at the various joints. The tendon reflexes about the wrist, at the knee and ankle were absent; the plantar responses were flexor. The blood count was normal, and the blood did not react to the Wassermann test. Arsenic was found in the hair on three occasions. The report on the X ray picture of the chest stated: "Extension from hilar region—probably inflammatory." The sputum did not contain tubercle bacilli, and hydatid disease was found to be absent.

Dr. Holmes & Court said that during this patient's stay in hospital the postural deformities had been in some degree overcome. The patient could now stand unsupported and could walk with the aid of a stick.

Dr. Holmes & Court's third patient was unfortunately too ill to appear at the meeting. However, his condition was described. The patient was a labourer, aged fifty years, who for the previous six months had been pushing a barrow and for the preceding six years had been on a fruit run. He was admitted to hospital on June 13, 1936, complaining of swelling of the feet on walking, of six months' duration, and pain in the left foot, with pins and needles, which began three months previously; the pain then appeared in the right foot and spread up both legs. A month later similar pain was noticed in the hands, with a cold feeling; these cold feelings became apparent at any point subjected to pressure. At this time loss of power in the sinews of the foot was noticed, together with difficulty in standing and a tendency to fall backwards. There were no other symptoms, and the patient stated that he took no alcohol and smoked only one ounce of tobacco per week.

Since his admission to hospital the patient had been depressed and querulous. Postural deformities had been avoided, but he still complained of great hyperæsthesia.

On examination all systems other than the nervous system were found to be free from pathological change. Hyperæsthesia was present, but no anæsthesia. There was motor weakness in the flexors and extensors of the wrist and ankles, together with impairment of the *quadrati femoris*. The blood failed to react to the Wassermann and Kahn tests. The blood picture and count were normal; there was no punctate basophilia. The result of the test meal was normal. In the urine there was neither arsenic nor a pathological amount of lead. Arsenic was present in the hair and nails. Examination of the cerebro-spinal fluid showed the globulin reaction to be positive, the glucose to be 72 milligrammes per 100 cubic centimetres, and sodium chloride 702 milligrammes *per centum*.

DR. C. G. McDONALD thanked Dr. Holmes & Court for giving members the privilege of seeing two patients with chronic arsenical poisoning and for telling them about a third. It was not often that they had this opportunity. More sufferers from this condition had been seen some years ago, when *Liquor Arsenicalis* in large doses was given in pernicious anemia and chorea, and when it was more fashionable to poison people by giving arsenic in chocolates. Occasionally patients were seen who had been poisoned in industry or over-treated with arsenic for such conditions as psoriasis.

The first patient shown by Dr. Holmes & Court had been particularly interesting, first of all because no better case of neuritis from the clinical point of view would have been possible, and secondly because it was shown that in this condition there were not only signs of the typical sensory involvement of the peripheral nervous system, but also on occasions a crippling motor nerve paralysis.

The other case demonstrated, one of keratosis, was interesting too, because it was now realized that keratosis could occur in chronic arsenical poisoning. This had been pointed out by Jonathan Hutchinson about forty years ago. A few years afterwards Arbuthnot Lane showed that keratosis could occur in other parts of the body and that malignant degeneration also could occur in keratinized patches. A few years later Clifford Allbutt described a similar case of multiple epitheliomata.

DR. COTTER HARVEY, commenting on Dr. Holmes & Court's first case, said that he first saw the patient in April, in reference to his pulmonary condition. He became interested in his nervous disorder and obtained detailed information concerning his past history. In November the patient had been admitted to a country hospital with a diagnosis of influenza. Hæmoptysis delayed his convalescence, and about a month after his admission he complained of tingling and numbness in arms and legs. Weakness soon followed, and his condition became rapidly worse. Eventually, practically paralysed in both arms and legs, he was admitted to the Royal North Shore Hospital with a provisional diagnosis of progressive muscular atrophy. He was then found to have chronic arsenical poisoning.

This man was quite certain that he had handled arsenic on one occasion only, when he sprayed a paddock with it six weeks before his admission to hospital. It seemed curious that he should have become steadily worse for some months afterwards, by which time the elimination of arsenic should have practically ceased.

Dr. Harvey doubted whether the spraying of the paddock was responsible for his condition, and considered that the manner by which arsenic had entered his system was still wrapped in mystery.

DR. H. C. ADAMS said that arsenical poisoning to such an extent as in Dr. Holmes & Court's first case must surely have been caused by more than one exposure. It would be expected that the Crookwell records would give an account of an attack of an acute type. Such cases were interesting. When people were deliberately poisoned there was always a history of acute and repeated attacks. Four or five years previously Dr. Adams had had an interesting case of a woman with complete wrist- and foot-drop due to arsenical poisoning. Arsenic had been demonstrable in the urine. But the period of elimination of arsenic after its administration was about three weeks. In this case the mistake had been made by the medical practitioner who had seen the attacks and failed to recognize that the patient was poisoned. Finally, a dose of arsenic had been given which almost caused death and did cause complete suppression of urine. The medical attendant wrongly concluded that the patient was suffering from uræmia. Eventually she came into hospital. Arsenic could be detected in the skin and hair. Dr. Adams wished to draw attention to this symptom of suppression of urine.

Dr. Adams said that he himself had produced keratoses of the hands, before "606" appeared, with arsenical drugs given for syphilis.

DR. L. W. DUNLAP spoke of a female patient who had been admitted to hospital under his care. Three and a half years before her admission she had consulted a

medical practitioner for a skin condition and had been given *Liquor Arsenicalis*, three minims three times a day. She had taken this for three and a half years, when she became paralysed in both legs, had marked keratoses on the palms and soles, and brownish pigmentation of the skin. This patient had been in hospital for three or four months without responding to treatment to any noticeable extent. Two or three years later her condition was still much the same.

Dr. A. J. COLLINS said that he had an intimate knowledge of the Royal Prince Alfred Hospital case that had been discussed. There had been a history of vomiting and diarrhoea for six weeks before admission to hospital. It had been taken for granted that the patient had had a single large dose of arsenic. There was reason to believe, however, that one of the visitors administered arsenic on subsequent occasions. After the patient was visited he vomited. But three days later all trace of arsenic had disappeared from the urine. Dr. Collins said that it looked as though the single large dose could produce neuritis.

Dr. Collins said that when absorption took place over long periods the excretion of arsenic was negligible, although it could be detected in small quantities in the urine for a long time. When all trace disappeared from the urine, arsenic might be epidermally detected for over a year. It had been suggested that the arsenic was stored in bone. In this case there had been no acute symptoms to give the idea of one large dose.

Dr. E. H. M. STEPHEN, referring to the effect of a single dose of arsenic, mentioned three young lieutenants who had eaten a cake in France in 1918. The mess cook had found what he believed to be some bicarbonate of soda, and determined to use it to make a damper. Meeting another cook belonging to an officers' mess, he gave him some of the material, feeling it prudent to let the experiment be proved on someone else's officers. Fully three months after eating this single damper, three young men came before the medical board at which Dr. Stephen officiated, showing well-marked foot-drop. In succession they exhibited the gait of a farm-yard rooster. There appeared every reason to suppose that at their rate of progress they would show the poultry step for another three months.

Dr. Holmes & Court said that he did not know how the patient in question had acquired his arsenic. In the third case there was no evidence at all of the patient's having handled arsenic. But Dr. Holmes & Court did not think he was deliberately poisoned.

In the keratosis case the diagnosis of arsenical poisoning was tenuous; it was based only on the finding of arsenic in the patient's hair and nails.

Raynaud's Disease.

Dr. JOHN HALLIDAY showed a female patient, aged twenty-three years, who was one of twins. Her twin brother had been delicate until he was eighteen years of age, but was now well; he had a chronic cough. The patient had had pneumonia at the age of four years. She had had chilblains on her hands, which were blue, as long as she could remember.

In April, 1931, while she was working for the leaving certificate examination, she developed a cough which persisted during the winter, and she lost weight. In August, 1931, pains commenced down each arm and the finger nails became bluish. The right hand also swelled and became discoloured, at times blue, then red, with subsequent return to normal. The hands were normal again by November. During this winter her chilblains had been very troublesome.

During the winter of 1932 there was a somewhat milder repetition of the preceding year's condition.

The year 1933 passed without any disturbance so far as the patient's hands were concerned. Her cough persisted and her weight fell from eight stone to six stone four pounds. She was advised to live in a dry inland climate.

In 1934 the patient went to Guyra, and during the winter of this year both her hands and the left foot became swollen and discoloured. The discoloration always com-

menced and was most marked at the periphery. Her condition was quite normal by September.

In 1935 the patient lived in Casino. In May the right hand became discoloured and swollen, with numbness of the right forearm. The condition became serious and she was admitted to Lewisham Hospital in July. Some small areas of gangrene appeared at this time and three operations were performed. The first operation was that of partial right thoracic trunk section, and some difficulty was found in delineating the ganglion and its connexions; some of this tissue was avulsed. Following this, Horner's syndrome was evident, together with improvement in the colour of the limb. Three weeks later, left inferior cervical ganglionectomy was performed, with immediate response in the limb and the appearance of Horner's syndrome on the left side. The improvement was so considerable on the left side that it was decided to open down on the right side. The surgeon divided a large nerve trunk previously left, as it was thought that it might be the first dorsal nerve and not a connecting branch. Following this and the cleaning out of all other possible nerve tissue in the region the right limb became pink and hot. The patient was discharged from hospital in a greatly improved condition. She returned to Casino and was well until December, 1935, when the nails again became discoloured.

From January to June, 1936, the hands were never normal; but the condition was variable and not very pronounced. In June both hands became very discoloured and remained so. The discoloration was particularly noticeable in the distal two-thirds of all the fingers, and the left hand was more affected than the right.

The patient was admitted to hospital again, and here the condition of the right hand became much worse, with increased swelling and discoloration; at times it was almost black, and multiple superficial areas of gangrene occurred, affecting the distal parts of the fingers, but also occurring on the dorsum and margins of the hand itself. At the time of the meeting the condition of this hand was much better, while the left hand was almost normal in appearance, unless the temperature dropped considerably.

On examination, bilateral Horner's syndrome was seen to be present, being more pronounced in the left than in the right. The skin of the face was normal. The right hand was of the so-called beef-steak type, with the fingers held slightly flexed. There was swelling of the dorsum and fingers, which tapered distally and ended in shortened distal phalanges. The skin of the two distal phalanges was thickened, inelastic and fixed, with changes of similar type, though of less degree, extending proximally. The cyanosis involved the fingers and dorsum and extended slightly over the wrist and forearm. There was at this time only one small area of gangrene present. The left hand showed no change in the skin itself as compared with the right, and for the previous three months had shown only mild and varying colour changes. The left foot showed slight colour changes, particularly the great toe. No other departures from normal were revealed by physical examination.

The oscillometer gave poor readings in each forearm, particularly in the right. Further, the response in each leg was considerably greater than in the forearms.

X ray examination of the right hand revealed atrophy and absorption of the distal phalanx of each finger. The transverse processes of the seventh cervical vertebra on each side were reported to be "unduly prominent".

The basal metabolic rate was 10%, and a test meal revealed the presence of hypochlorhydria. The serum calcium was 11.2 milligrammes per centum, and there was no response to the Wassermann test. Treatment with calcium gluconate, acetyl choline, "Padutin" and "T.A.B." vaccine was without noticeable effect; the administration of thyroid extract also failed to produce any response in the patient.

In conclusion, Dr. Halliday said that the following points were of interest in this case: (i) the long antecedent history of chilblains and blue hands; (ii) the appearance of the condition following a period of ill-health and stress; (iii) the onset each year during winter, with remission in summer; (iv) the gradual increase in intensity of the condition, culminating in 1936 in the

occurrence of gangrene and permanent changes in structure of skin and bone of the fingers (sclerodactyly); (v) the apparent temporary beneficial effect of the ganglionectomy; (vi) the diagnosis, prognosis and treatment of the case.

Dr. S. A. SMITH said that there was not much left to say concerning this patient. He himself had had some difficulty in diagnosing some peripheral vascular conditions—those that lay between hereditary cold fingers and *thromboangiitis obliterans*. Some of his difficulties had been resolved by reading Hunt's article; Hunt had tried to lay down definite criteria, but it was still a difficult matter to distinguish between these conditions. Raynaud's phenomena were certainly present in the case under discussion; but the right diagnosis seemed to be that of a sclerodactyly. Correct diagnosis seemed to be the most pertinent thing in this case, and the prognosis was gloomy.

Dr. Smith stressed again the main points of the case: The condition differed from true Raynaud's disease in the lack of intermittency of the phenomena once they had made their appearance under the influence of cold. Every winter the symptoms persisted for months, and there was relatively little change from month to month. The atrophic changes had involved more than the skin. Hunt said that 75% of these patients had scleroderma of the face; but in this patient it was not present.

Dr. Smith was also interested in the oscillometric findings. He had not had much experience of such findings in Raynaud's disease. But, accepting Lewis's theory, he had been surprised to find that the oscillometric readings in the forearm were so much less than in the upper arm. If a conclusion could be drawn from this, he would say that the disturbance was in the vascular structures or involved vessels larger than the digital vessels. The oscillometric results here were more comparable with *thromboangiitis obliterans*.

There was one other point, namely, the temporary effect of ganglionectomy. A less striking effect was observed usually in cervical than in lumbar ganglionectomy. But even so the effects of ganglionectomy, if occurring immediately after operation, were more likely to be permanent in true Raynaud's disease, since, in the majority of patients suffering from this condition, there was immediate improvement and subsequent symptoms were never so severe. But in this case, on one side the symptoms seemed as severe, if not more severe, than before. Perhaps complete ganglionectomy had not been performed on that side by the surgeon. The operation might have been incomplete on the right side.

Dr. Smith said that he was unable to add any suggestions as to treatment. And in regard to prognosis, it appeared that if the vascular channels were so considerably damaged the outlook must ultimately be very bad for retention of the affected arm.

Acrocyanosis.

PROFESSOR C. G. LAMBIE showed a female patient, aged twenty years, who gave a history that from her early childhood she had had a high colour, which remained present whether the temperature was hot or cold. The extremities were blue; this condition was worse in cold weather and when the limbs were in a dependent posture. From the age of sixteen years she had suffered from chilblains; she also felt the cold a great deal. The patient complained of palpitation and dyspnoea, but exercise tolerance showed that these symptoms were not related to the circulation. Congenital heart disease was also excluded. There was, moreover, no deficiency in the oxygen percentage of the arterial blood. In addition to this there were metabolic disturbances and the patient displayed sexual infantilism, having never menstruated. The metabolic rate was -19 and the sugar tolerance was much increased. The patient was extremely thin and had lost weight, particularly during the last four years. The blood calcium was about 15% below normal. The intelligence was also subnormal. The family history of this patient was interesting. Her brother had had chilblains for four years and her sister for two years; the father had had blueness of the limbs all his life; the uncles on the father's side also had blue extremities and chilblains,

and likewise the grandfather on the father's side. The distribution of colour was interesting; it was most marked over the tips of the fingers, but came almost up to the elbow on a cold day. In the lower limbs it extended well up the calf and showed grading in intensity, increasing towards the periphery.

Professor Lambie stressed the blueness of the extremities, the metabolic disturbance and the striking family history.

In investigating this case the triple response was first investigated. Normally the triple response consisted of: (i) a flush consisting in a capillary response to direct stimulation; (ii) a flare spreading of erythema, dependent on the integrity of the peripheral nerves (axone reflex); and (iii) a wheal, resulting from a chemical stimulus causing increased permeability of the capillaries. This was tested by a mechanical stimulus and the response contrasted over the cyanotic and non-cyanotic areas. When the triple response was tested on the upper part of the arm, which was almost normal, there was a flush, a flare, then a wheal. But when this was repeated over the cyanotic area two points were noteworthy: (i) the flare appeared more rapidly than normal, lasted longer and extended more widely, being bright red in colour; but (ii) there was no evidence of its being followed by a wheal. Therefore there was no increase in permeability of the capillaries in response to the stimulus. There was a similar result when a test was made with histamine; an enormous flare appeared over the cyanotic area, but no wheal.

Lewis, in a paper on acrocyanosis, stated that when the limb was elevated for two or three minutes it blanched, showing that the blood could flow out of the capillaries, and suggesting that the obstruction was on the arterial side; but in this case this did not occur so readily. On the other hand, some of the other responses were interesting. It was found that the patient exhibited reactive hyperemia to heat. But it was noteworthy that in heating up in air a higher temperature was required to get the rapid rise in skin temperature indicative of vaso-dilatation. Up to 80° F. there was no difference between skin temperature and room temperature; the skin remained cool; but at 81° F. the skin temperature was 86° F., and at 82° F. it was 92° F.—10° of difference. It was therefore necessary to heat to a much higher level to get this sudden change than in the normal.

Professor Lambie referred to Lewis's further observation on the effect of anesthetising the ulnar nerve, and said that Lewis found that there was no change in peripheral cyanosis in the corresponding area and so concluded that the condition was a peripheral one, independent of afferent nerves. If this was a local condition, a number of interesting points emerged. The peripheral arterial circulation did react, even more readily than normal, to mechanical and chemical, but it did not react normally to thermal stimuli. The change in reactivity of the capillaries was not uniform in distribution, but affected the capillaries of the distal parts of the extremities and the face. The condition was also associated with a general metabolic disturbance, but whether this had anything to do with the peripheral vasomotor disorder was a matter for discussion.

Dr. KEMPSON MADDOX, in discussing this case, said that it was not because he knew anything further about it that he had been persuaded to speak on this subject, but because he had seen this patient in the hospital ward. Her appearance there had been most striking; she had a violaceous flush in the face and hands that was very arresting. He found that the condition had chiefly interested French physicians, notably Villaret and Besançon. There was primarily a large number of people with cold, blue hands, which seemed to run in families. This case was possibly an acute example of the familial condition.

It was apparent from Professor Lambie's remarks that this case differed in that the peripheral arterioles were constricted; usually the subpapillary venous plexus was most dilated. It would be interesting to hear what effect acetylcholine would have in this case. Probably preparations of the active methyl type would cause heating of the hand, if Professor Lambie's assumption was correct.

Association of this condition with the Hippocratic or clubbed fingers might be expected from what was known of the latter condition, when the circulation was poor in the extremities.

The pituitary features of the case were most striking, because in most cases there was apparently no such abnormality. In Professor Lambie's case the condition had associations with pituitary infantilism and Simmond's disease.

Apparently in some instances this condition had been treated by excision of the stellate ganglia *et cetera*; but Dr. Maddox did not think that such radical treatment was called for. In fact many people went to great expense to acquire this very tint.

Dr. W. E. FISHER said that last year he had shown a similar case, with the diagnosis of acrosphephxia, which was reported fully in a paper on vasospastic disorders read on June 11, 1936. In this case also there was evidence of pituitary disorder; the patient had gained weight over a period of three years, menstrual loss had decreased and the basal metabolic rate was -15%.

After this patient had been shown at the meeting she had been given anterior pituitary lobe extract. She then lost weight, her menstrual loss increased in amount and frequency, and the last time Dr. Fisher had seen her she had been walking down Pitt Street with a young baby in her arms. Unfortunately, however, the acrocyanosis, which had coincided in onset with the obesity, had been in no way affected.

Professor Lambie said that the patient had been tested with acetylcholine and prostigmine. Both substances produced a flare, but not such a marked flare as with histamine. The obstruction was chiefly on the arterial side, although perhaps not entirely, and Professor Lambie suggested that the cyanosis was due to a disproportion between the rate of flow in the capillaries and the oxygen consumption. He found that in the upper limb there was a 70% desaturation of the hæmoglobin in passing from the arterial to the venous side, instead of the normal 30%. The arterial blood was fully saturated with oxygen. The fact that only certain vessels were affected was a point against the disorder being of a metabolic origin. It was interesting to notice that the vessels involved were those exposed and therefore those that played the greatest part in the regulation of body temperature. It was known that the regulation of temperature was dependent on centres in the hypothalamic region. But in spite of the metabolic disturbance Professor Lambie did not think that there was sufficient evidence to incriminate that region—that would be an all too convenient hypothesis. The patient was being treated with "Antuitrin S" without any visible result.

Cystic Disease of the Lung.

Dr. BRUCE HALL demonstrated a pathological condition of the lung with cyst formation. The morbid anatomy and autopsy report stated that there were old, firm, pleural adhesions in both lungs. In the right lung the upper lobe showed cavitation at the apex, and opposite the hilum there were numerous thin-walled cavities extending out to the pleura. The walls of the cavities were smooth, "clean" and of slate or pale cream colour. Many cavities were crossed by fine trabeculae. These were empty, but appeared to contain air. Microscopic examination of this area of the right lung showed much fibrous tissue. Local arterioles showed intimal thickening. There was no evidence of tuberculosis, even in a scraping taken from the wall of a cavity. The surface tissue lining of these cavities appeared to be a "flat" epithelium, not at all suggestive of bronchial mucous membrane. The lower lobe of the right lung showed several thickened bronchi and heavy, almost consolidated lung tissue, and was smaller in size than normal. Microscopic section showed fibrous tissue increase in the alveolar walls. Pus cells were present in many alveoli, and there was some breaking down of alveolar walls, suggesting a chronic or subacute pneumonitis. Another section taken from the root of the right lung, about the right main bronchus, showed no evidence of newgrowth, but there was an increase of fibrous tissue around the bronchus.

The left lung was bulkier than the right, did not show any cavitation and had much more lung tissue available for respiration. Microscopic examination showed an increase in fibrous tissue and some groups of small round cells. A large arteriole or artery showed much subintimal thickening. There was oedema in many alveoli and thickening of alveolar walls. Other areas showed fibrinous exudate in the alveoli, also a few red blood cells, but few leucocytes (pus cells); many pigment macrophages were seen in the alveoli.

The hilar lymph glands showed no evidence of tuberculosis. No significant lesions were found in the heart; agonal clot was present in the chambers on the right side and there was some dilatation of the right pulmonary artery. There was some chronic venous congestion in the liver. The kidneys were not contracted; a few cortical cysts were seen and microscopic examination showed cloudy swelling of the convoluted tubules. Medium arterioles showed arteriosclerosis, but had a good lumen. There were only a few fibrosing glomeruli.

Dr. Hall said that, although he was uncertain what the condition was, it seemed to be related to that demonstrated in six cases by Dr. Cotter Harvey about a year previously. Since at that time no morbid anatomical material was available, Dr. Hall had brought this specimen principally for Dr. Harvey's examination and comment.

From contemplation of the specimen and the brief history of the case Dr. Hall said that the condition must be regarded as either primarily a congenital abnormality with secondary acquired changes superimposed, or else an entirely acquired condition. If the cystic spaces contained air, and it was Dr. Tebbutt's opinion that they did, then presumably they had communication with some ramification of the bronchial tree. Whether the condition was regarded as primarily congenital or entirely acquired, it was difficult to understand how "dead spaces" such as these had remained "uninfected". If the condition was acquired, Dr. Hall thought that the following possibilities would have to be reviewed: Were these changes the result of inflammation, of degeneration or of newgrowth? Dr. Hall thought that the possibility of newgrowth might be dismissed, since the condition had not the features of newgrowth, since no evidence of newgrowth had been found and since a newgrowth producing a picture such as was present would certainly have been recognized. As to the possibility of the condition being primarily degenerative, the distribution of the main mass of the morbid process in the middle area of the lung was worthy of note. Could interference with local circulation possibly produce a change of this nature? Dr. Hall did not consider that even the presence of pneumonitis in the adjacent lung eliminated this possibility. As to the origin of the lesion being inflammatory: the history, the presence of pneumonitis of various grades in both lungs, and the extensive pleural adhesions had to be considered as evidence of a widespread pulmonary infection. Only one definite feature emerged from this case: nowhere, either *ante mortem* or *post mortem*, had there been found any positive evidence of tuberculosis.

In conclusion, Dr. Hall expressed his indebtedness to Dr. Tebbutt for permission to show this specimen.

Dr. COTTER HARVEY said he had been very interested in Dr. Hall's demonstration of the pathological specimen prepared by Dr. Tebbutt, as it was the first he had actually seen of this disease *post mortem*. Reference to the literature indicated that cystic disease of the lung was not so uncommon. Dr. Hall had given three causes, and to these he would add a fourth: the cysts might be congenital. It seemed certain, however, that lung cysts could result from stenosis of a bronchus, especially in children, when the pulmonary tissues were readily distensible. In any case, the clinical significance of a cystic condition did not depend on its method of formation. Broadly, there were the two types of this condition: the solitary cysts, which often resulted in spontaneous pneumothorax, and multiple cystic disease, wherein the common complication was infection, leading to a clinical diagnosis of bronchiectasis. There was little doubt in Dr. Hall's case that the explanation he had given of the origin of the cystic condition was correct.

It was interesting to note in this case that sepsis had not supervened.

Dr. Harvey then showed skiagrams of three cases he had seen of this condition. The patients were all alive and well at the moment, but he had no doubt of the diagnosis.

NOMINATIONS AND ELECTIONS.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Deck, Maurice Feild, M.B., B.S., 1935 (Univ. Sydney), 9, Kardinia Road, Clifton Gardens.

Austin, Hartley Willson, M.B., B.S., 1935 (Univ. Sydney), Sydney Hospital, Sydney.

Medical Societies.

THE MELBOURNE PÆDIATRIC SOCIETY.

A MEETING of the Melbourne Pædiatric Society was held at the Children's Hospital, Carlton, Melbourne, on Wednesday, September 9, 1936, Dr. C. H. OSBORN, the President, in the chair. Part of this report appeared in the issue of January 23, 1937.

Bilateral Renal Calculus.

DR. J. G. WHITAKER presented the boy J.M., six years of age, who had been shown previously at the meeting of the Society on July 8, 1936, by Dr. A. P. Derham. Dr. Whitaker said that the calculus had been removed from the right kidney, but there was a large stone still present in the right ureter. He asked for advice concerning its removal and wondered whether the child could lead a prolonged and useful life in spite of all the operations he had had. Dr. Whitaker also asked for suggestions for preventing further recurrence of calculus formation.

DR. HAROLD MOORE said that he thought that the ureteral calculus should be removed; the ureters would probably be as big as normal intestine and would be quite easy to find. He thought that McCarrison's suggestion about diet was important in the etiology and prevention and that a course of treatment with mandelic acid or some such urinary antiseptic was indicated. Control of the urinary hydrogen ion concentration was necessary to get the best results with sodium mandelate. Higgins, of Cleveland, admitted the patients to hospital and placed them on an excessive acid-ash diet combined with a high vitamin content, and administered ammonium chloride or acid sodium phosphate, in capsules if necessary, to raise the hydrogen ion concentration to 4.5.

DR. ROBERT SOUTHEY said that in patients with congenital dilatation of the ureter with hydronephrosis the ultimate prognosis was not good, and he suggested that urea concentration tests should be done at intervals.

Osteochondritis Desiccans.

Dr. Whitaker also showed a boy, eleven years of age, who for two months had had dysfunction of the right knee with attacks of locking of the joint. The knee had been flexed for two days when the boy came up for examination, but there was no tenderness over the internal meniscus. The skiagram presented the appearances of *osteochondritis desiccans*. At operation Dr. Whitaker had found a big hole in the medial epicondyle, but no "joint mouse" could be found.

A feature of great interest was that, at the suggestion of Dr. Colin MacDonald, a skiagram had been taken of the other knee, and the appearances suggested strongly that a similar condition was present at exactly the same site,

but the outline could be made out of a loose body filling the cavity. Dr. Whitaker said that at a later date he would report the case fully.

Osteochondritis desiccans had first been described in 1887 by Kernig as a quiet dissecting necrosis of bone with the separation of a loose body in the joint. The condition was rare in patients under the age of fifteen years. Dr. Whitaker had had a somewhat similar case two or three years previously, when he had also failed to find the "joint mouse". The bilateral nature was rarely described; the only example he had come across was Sir Anthony Bowlby's case in a boy eighteen years of age. The cartilage cells were very viable and the loose body tended to grow and to alter in shape. Though there was a hole in it, the bone appeared to be perfectly healthy underneath. Dr. Whitaker wondered what cause could be operative which would produce such a bilateral lesion in the same patient. The screwing-home movement of the tibia and femur in full extension might have something to do with it, but it seemed necessary to postulate a preexisting congenital anomaly.

Dr. C. H. OSBORN congratulated Dr. Whitaker on this extremely interesting case and said that he thought that it should be reported fully later.

Periarthritis of the Knees.

DR. H. BOYD GRAHAM showed a red-haired girl, eight years and six months of age, with symmetrical periarticular thickening of the knees. Three years earlier she had injured the left ankle on a tricycle and attended the Alfred Hospital for treatment. The leg was put in plaster, which at first encased the foot and leg almost up to the knee. Later the plaster was cut and the anterior portion was removed, the remainder being worn as a back splint for more than six months. A number of skiagrams were taken and, though the condition was suspected to be tuberculous, this view was not substantiated; with the aid of treatment by ultra-violet light, obtained elsewhere, the joint recovered, and she went off to school and appeared to be quite well for more than a year.

On October 17, 1935, she was admitted to the Children's Hospital on account of her knees, which she could not straighten beyond a right angle. Three months before her admission she had sprained the left ankle, which got better very quickly, and a few weeks later the right ankle became bruised and sore, though there was no history of injury. The ankles recovered quickly, but in another month both the knees became painful and stiff, and for a week before admission the pain had been severe in her knees, especially in the right, and she had not walked. She had had no pain in any of the other joints, but had been generally out of sorts and had lost weight and had been having night sweats. She was the only child of healthy parents, and had had whooping cough and measles before the onset of the trouble. Her tonsils and adenoids had been removed after she recovered from the first attack, and there was no history of contact with human tuberculosis.

When she was admitted to hospital, the features of interest on examination were the absence of enlargement of lymph glands or of spleen and of involvement of any joints other than the knees. No fluid could be detected in the knee joints, and the limitation of movement was considered to be due to muscle spasm. The legs were put up in extension with a sling under the knees and salicylate of sodium was administered. The Mantoux test gave no reaction and the blood failed to yield the Wassermann reaction. Radiographic evidence established that, apart from some general calcification, no bony changes were present and the swellings were of the soft tissues only. In one week the legs were straight and there was very little pain on movement. The evening temperature was approximately 37.2° C. (99° F.) for ten days and then subsided. The blood picture was within normal limits. The condition was considered to be rheumatoid arthritis, and on November 19, 1935, she was transferred to the after-care home, where she remained for seven weeks at rest. Movements at the knee joints were quite good, and practically a full range of movement was possible without pain. The joints were still swollen and a little fluid was present;

there was wasting and loss of tone of the muscles of the legs and thighs, with some degree of *genu valgum*, which affected the right leg more than the left.

At that stage she returned to the Children's Hospital for a course of treatment by injections of calcium gluconate, which at first produced a febrile reaction, but later no reaction followed. She also had massage alternated with splinting, and the swelling became less and the fluid disappeared from the joints. By February 1, 1936, she commenced walking exercises and ultra-violet light treatment in addition to massage, and the calcium gluconate was discontinued. She was discharged to the out-patient department on March 6, 1936. She did not attend, however, until July 15, 1936. She was able to walk freely and had had very little joint pain, but was rather thin. Cod liver oil and tonic treatment were advised, and in the meantime she had become very fit and well.

Dr. Graham showed the child because she still had some swelling of the soft tissues around her knees, and he considered that it was of interest to decide whether she was likely to have any return of acute symptoms and whether it was reasonable to restrain her activities or to embark on lengthy physical therapy or vaccine treatment. She was a bright and merry little girl and was so well that she was inclined to bound and run rather than walk, but some *genu valgum* was still present.

Pathological Specimens.

DR. REGINALD WEBSTER demonstrated from a series of pathological specimens, included among which were:

1. An example of extreme mitral stenosis in a girl, aged twelve years. The mitral orifice well merited the description "button-hole" and the segments of the valve were remarkably rigid. The clinical notes stated that there had never been any well-defined attack of rheumatic fever, but that for three years the girl had been compelled to lead an inactive and sedentary life on account of general ill-health, in which "growing pains" were conspicuous.

2. The lungs from an infant who died at the age of six months. The apical portion of the right lung exhibited tuberculous lobar consolidation, with central softening, and throughout the remainder of the right lung and the whole of the left lung were extensive tuberculous lesions of typically bronchopneumonic distribution. In commenting upon this specimen, Dr. Webster remarked that it was somewhat surprising to find such severe pulmonary tuberculous infection in so young an infant, unattended by any usual visceral and meningeal dissemination.

3. Two specimens of oesophageal malformation, the first an example of total atresia and the second a tracheo-oesophageal fistula.

4. The thymus and kidneys of a boy, aged twelve years, who died of acute lymphoblastic leuchæmia. The presence of a mediastinal tumour was diagnosed clinically and radiographically. A biopsy microscopic section of a lymphatic gland eliminated Hodgkin's disease, but left diagnosis very close between lymphosarcoma and acute leuchæmia. The condition soon declared itself, although the finding on examination of the boy's blood at the time of his admission to hospital had been inconclusive.

5. Cerebral tumours: (a) An example of the commonest brain tumour of childhood, the cerebellar medulloblastoma. (b) A suprasellar tumour, exhibiting cystic degeneration and calcification. The calcification no doubt accounted for the excellent shadow of this tumour obtained in a radiogram. The diagnosis of cranio-pharyngioma was established by a biopsy microscopic section, and a photomicrograph was demonstrated on the screen. By comparison with other photomicrographs, Dr. Webster demonstrated the histological identity of the cranio-pharyngioma and the epithelial odontome. The latter was known also as "adamantinoma" and most appropriately as "fibrocystic" disease of the jaw. The basal-celled carcinoma, or rodent ulcer, showed a similar architecture in the epithelial processes.

Dr. Webster concluded by demonstrating from a number of photomicrographs referable to the leuchæmic viscera and cerebellar medulloblastoma.

Congress Notes.

AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION): FIFTH SESSION.

Proposed Programme.

THE following is the provisional programme for the fifth session of the Australasian Medical Congress (British Medical Association), to be held at Adelaide on August 23 to 28, 1937.

Monday, August 23.

Morning.—Registration of members.

Afternoon.—Proposed garden party.

Evening.—Inaugural meeting at Bonython Hall at 8 p.m. (President's address). Presentation of the Stawell Memorial Clinical Prize.

Tuesday, August 24.

Morning.—Plenary session. Speakers: Dr. M. J. Holmes, Dr. L. B. Bull, Dr. Cotter Harvey. The subject to be discussed will embrace some aspects of tuberculosis.

12.30 p.m.—Official photograph of congress. Proposed luncheon arranged by Oto-Rhino-Laryngology Section. Proposed luncheon arranged by Ophthalmology Section.

Evening.—President's reception.

Wednesday, August 25.

Evening.—Returned soldiers' dinner. Public lecture.

Thursday, August 26.

Evening.—Congress dinner, at which both men and women may attend.

Friday, August 27.

Evening.—Dance at refectory, University of Adelaide. (Proposed luncheon for Fellows and Members of the British College of Obstetricians and Gynecologists.)

Afternoon.—It is proposed to hold a golf competition for a cup to be presented by Dr. T. G. Wilson on Friday, August 27. Further particulars of this competition will appear at a later date.

The Section of Neurology and Psychiatry.

During the fifth session of congress it is intended that the Section of Neurology and Psychiatry shall hold four sessions. One session shall consist of a combined meeting with the Section of Ophthalmology. At the remaining sessions papers will be read upon subjects relating to psychiatry, neurology and neuro-surgery. Should any member desire to present a paper on any subject in these branches of medicine, the Honorary Secretaries, Dr. H. McI. Birch and Dr. Leonard Lindon, would be glad to hear from them.

Correspondence.

TREATMENT OF EARLY CARCINOMA OF THE LIP.

SIR: In the last issue of your journal published on January 16, was a paper written by me on the treatment of early carcinoma of the lip, with special reference to the use of low kilovoltage X rays.

On page 92, in the last paragraph but one, I gave a summary of the technique employed by Dr. Molesworth in the treatment of early carcinoma of the lip. I did this with the purpose of showing that the technique employed by myself, and described on page 93, was a modification of the one advocated by Dr. Molesworth. As Dr. Molesworth does not think that this is sufficiently apparent, I would be glad if you would print this letter in a subsequent journal, stating that the technique employed by me is a modification of that described previously by Dr. Molesworth.

Yours, etc.,

143, Macquarie Street,
Sydney,
January 19, 1937.

J. C. BELISARIO.

Obituary.

WILLIAM IAN MACKINTOSH.

We regret to announce the death of Dr. William Ian Mackintosh, which occurred on January 19, 1937, at Hawthorn, Victoria.

Diary for the Month.

- FEB. 2.—New South Wales Branch, B.M.A.: Organization and Science Committee.
 FEB. 3.—Western Australian Branch, B.M.A.: Council.
 FEB. 3.—Victorian Branch, B.M.A.: Branch.
 FEB. 4.—South Australian Branch, B.M.A.: Council.
 FEB. 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 FEB. 16.—New South Wales Branch, B.M.A.: Ethics Committee.
 FEB. 23.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 FEB. 24.—Victorian Branch, B.M.A.: Council.
 FEB. 25.—South Australian Branch, B.M.A.: Branch.

Medical Appointments.

Dr. T. C. Kohler has been appointed Medical Officer at the Wallaroo Hospital, South Australia.

Dr. H. McI. Birch has been appointed Superintendent of the Enfield Receiving House, under the provisions of the *Mental Defectives Act*, 1935, of South Australia.

Dr. K. B. Shallard has been appointed Honorary Assistant Anaesthetist, Liverpool State Hospital and Home, Office of the Director-General of Public Health, New South Wales.

Dr. F. J. Jude has been appointed Certifying Medical Practitioner and Medical Referee at Mildura, Victoria, under the provisions of the *Workers' Compensation Act*, 1928, of Victoria.

The following appointments have been made at the Perth Hospital: Registrar, Dr. R. Muecke; Junior Resident Medical Officers, Dr. C. Kuhlmann, Dr. M. Mayrhofer, Dr. R. Anderson, Dr. L. G. Redgrave, Dr. Marjorie Gilchrist, Dr. A. J. Campbell and Dr. R. Ferris.

The undermentioned have been authorized to sign permissions and certificates for cremation, and to grant permission to cremate any human body after death, in pursuance of the provisions of the *Cremation Acts*, 1913 to 1935, of Queensland: Dr. E. H. Derrick, Dr. J. V. J. Duhig, Dr. R. Hemsley, Dr. S. Julius, Dr. G. C. Taylor.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xiii, xiv, xv.

CAULFIELD CONVALESCENT HOSPITAL, CAULFIELD, VICTORIA: Resident Medical Officers.

LEWISHAM HOSPITAL, LEWISHAM, NEW SOUTH WALES: Honorary Assistant to Urological Department.

THE PUBLIC SERVICE BOARD, SYDNEY: Medical Officers.

TOOWOOMBA HOSPITALS BOARD, TOOWOOMBA, QUEENSLAND: Resident Medical Officer.

UNIVERSITY OF OXFORD, ENGLAND: Nuffield Professorship of Clinical Medicine, Nuffield Professorship of Obstetrics and Gynaecology.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY Hospital are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 178, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.